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THE

PHILOSOPHICAL WORKS

OF

FRANCIS BACON,

Baron of VERULAM, Viſcount ST. ALBANS,

AND

Lord High-Chancellor of *England*;

Methodized, and made *Engliſh*, from the ORIGINALS.

WITH

OCCASIONAL NOTES,

To explain what is obſcure; and ſhew how far the ſeveral PLANS of the AUTHOR, for the Advancement of all the Parts of Knowledge, have been executed to the preſent Time.

In THREE VOLUMES.

By *PETER SHAW*, M. D.

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ERRATA in VOLUME II.

Page.	Line.	
49.	4.	for fre r. free.
55.	19.	for then r. them.
ibid.	36.	for *Paracelsists* r. *Paracelsists*.
58.	18.	*dele* right of.
59.	4.	for expatiate r. expiate.
77.	9.	for quarelsome r. quarrelsome.
104.	24.	before seldom insert but.
145.	3.	for Presidents r. Precedents.
160.	15.	for *te* r. *se*.
198.	20.	after should *dele* to.
207.	4.	for Choic r. Choice.
328.	32.	for regard r regards.
339.	15.	before *they* insert *that*.
345.	4.	after *than* insert *to*.
353.	ult.	for Sect. II. r. Sect. III.
354.	35.	for waverily r. waveringly.
355.	pen.	r. *Aph.* 2. and 17.
397.	24.	for Syllogisms r. Syllogism.
409.	17.	*dele* find.
ibid.	20.	*dele* may.
409.	43.	after in *dele* his.
415.	26.	after delivering *dele* the.
418.	21.	after have insert been.
432.	1.	for Experiment r. Experiments.
447.	16.	for Pitch r. Pith.
458.	21.	for *Aph.* 4. (5. 6.) r. *Aph.* 4. 5. 6.
466.	2.	for Dilation r. Dilatation.
481.	34.	Side Note, after directly *dele* to.
485.	34.	after ought insert not.
502.	36.	r. See Vol. III. p. 72.
505.	36.	for *Micographia* r. Micrographia.

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SUP-

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SUPPLEMENT VIII.

A

SPECIMEN

OF THE

PERSIAN MAGICK:

OR,

An ESSAY *towards deriving* POLITICAL *from* NATURAL KNOWLEDGE; *on occaſion of an* UNION *betwixt* ENGLAND *and* SCOTLAND.

Dedicated, in private, to King JAMES I.

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PREFACE.

THE primary View of the following Piece was, doubtleſs, indirectly to convey Inſtruction to the King, in his Deſign of uniting the two Kingdoms: A Subject afterwards thoroughly digeſted, and cloſely ſtudied by the Author, in all its Branches, under the Title of Certain Articles, or Conſiderations, touching the Union of the Kingdoms of *England* and *Scotland*, collected and diſperſed, for his Majeſty's better Service [a].

To gain the more favourable audience of a Prince who valued himſelf for his Learning, the Author ſeems to have choſe this learned Expedient; and under pretence of reviving the Perſian Magick, *reads a* political Lecture *upon the proper method of uniting Kingdoms. Yet this primary Intention did not over-rule the Author's Deſign of* giving a Specimen *of what may, both from the nature of the thing, and the ancient accounts, be rationally conceived a part of the* Perſian Magick; *viz.* the drawing Rules and Maxims of Government from Phyſical Obſervations [b]: *Which is alſo ſaid to be done, with great Exactneſs, by the* Chineſe. *The Subject is proſecuted by the Author in the ſame manner* as he interprets the Heathen Mythology, *in his* Sapientia Veterum. *And in that manner it had been eaſy for a perſon of his extenſive Knowledge in* Phyſicks *and* Politicks, *to have wrote a* Syſtem of this kind of Perſian Magick: *A Work reſerved for ſome other eminent* Philoſopher *and* Politician, *to finiſh upon this* Plan.

[a] See Mr. *Blackbourne*'s Edition of the Author's Works, VOL. IV. p. 234.

[b] For more particular Informations in this reſpect conſult the *De Augmentis Scientiarum*, Sect. III & VI. and Dr. *Hyde*'s *Hiſtoria Religionis Veterum Perſarum, eorumq; Magorum*, &c. p. 374, &c.

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A SPECIMEN OF THE PERSIAN MAGICK[c], &c.

1. THIS no wonder, excellent *King*, that when *Heraclitus* the *obſcure*, had publiſh'd a certain *Book*, not now extant, many took it for a *Diſcourſe of Nature*, and others for a *Treatiſe of Politicks*: For there is a great affinity between the *Rules of Nature*, and the *true Rules of Policy*; the one being no more than an *Order in the Government of the World*, and the other an *Order in the Government of a State*. Whence the Kings of *Perſia* were educated, and inſtructed in a *Science* that went by a name of great reverence, tho now degenerated, and taken in an ill ſenſe: For the *Perſian Magick*, which was the *ſecret Literature of their Kings*, was an application of the contemplations and obſervations of *Nature*, to a *political ſenſe*; thus making the *fundamental Laws of Nature*, an *Original*, *firſt Model*, or Pattern, for *Government* [d]. *Political Rules drawn from Phyſical Obſervations, among the Perſians.*

2. In purſuance of this method, the *Perſian Inſtructors* ſet before their *Kings*, the *Examples of the celeſtial Bodies*; the *Sun*, the *Moon*, &c. which have great glory and veneration, but no reſt; being in a perpetual office of motion, for cheriſhing the inferior bodies in their reſpective turns and courſe: Thus likewiſe expreſſing the true nature of the *motions of Government*; which, tho they ought to be *ſwift* and *rapid*, in reſpect of diſpatch and occaſions, yet are to be *conſtant* and *regular*, without wavering or confuſion. *Illuſtrated by Examples drawn from the Celeſtial Bodies.*

3. Their Inſtructors alſo repreſented to them, that the *Heavens* are not enrich'd by the Earth and the Seas; nor keep a *dead ſtock*, or *untouch'd treaſure* of what they attract from below: But whatever moiſture they *levy*, and take from both thoſe Elements in Vapour, they ſpend, and return in *Showers*; only holding and ſtoring them up for a time, in order to iſſue and diſtribute them in *ſeaſon* [e]. *The raiſing of Vapour and returning Rain.*

4. But chiefly they expreſs'd, and explain'd to them the *fundamental Law of Nature*, whereby all things ſubſiſt, and are preſerved; *viz.* that *all things in Nature, tho' they have their own private and particular affections and appetites,* *The general affections taking place of particular.*

[c] See the *De Augmentis Scientiarum*, Sect. III. 3.

[d] The Author makes a happy uſe of this method in his own *Political Writings*; and conſtantly draws and illuſtrates his Politicks from Philoſophy, and examples of Nature. And ſurely ſomewhat conſiderable might be effected, by thus making the *Government of the Univerſe*, a *Model for the Government of States*: See the *Sapientia Veterum*, Sect. III.

[e] The Author ſhews great *Addreſs* in his ſeveral *Applications* to *King James the Firſt*: A Prince whoſe *Temper* and *Diſpoſition* he thoroughly underſtood. See SUPPLEMENT V. *ad finem.*

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appetites, which they follow in ſmaller matters, when free from more general and common Reſpects; yet, when there is cauſe for ſuſtaining the more GENERAL, *forſake their own particulars, and conſpire to uphold the Publick.* Thus we ſee *Iron* in a ſmall quantity will aſcend, and approach the *Loadſtone*, by a particular ſympathy: But if the Iron be in any large quantity, it drops its appetite of amity to the *Loadſtone*, and, like a true Patriot, cleaves to the *Earth*; which is the Region of maſſy bodies. So *Water*, and other matters, fall towards the centre of the Earth, which is their *Region* or *Country*; and yet nothing is more uſual in *Water-works* and *Engines*, than for the *Water*, rather than ſuffer any diſunion in Nature, to aſcend; and forſaking the love of its own Region or Country, apply itſelf to the Body next adjoining.

Sudden Changes uſually attended with violence.

5. There are numerous *Examples* of this kind. Your Majeſty ſingled out one in your gracious *Speech of Thanks* to your *Council*, when princely acknowledging their vigilancy and merits, you were pleas'd to note, that it was a Succeſs and Event *above the courſe of Nature*, to have *ſo great a change brought about with ſo great quiet: becauſe ſudden mutations as well in a State as in Nature, rarely happen without violence and perturbation* [f]: Whence again I conclude there is a *congruity between the Principles of Nature and Policy.* And, leſt your own Inſtance ſhou'd ſeem to contradict the aſſertion, I offer your Majeſty a type, or example in *Nature*, much reſembling this event in your *State*; viz. *Earthquakes*, which often produce great terror and ſurprize, but no real miſchief; the Earth trembling for a moment, and ſuddenly eſtabliſhing itſelf in a perfect quiet again.

An attempt to revive the Perſian Magick, *in the Inſtance of* uniting Kingdoms.

6. This *Knowledge* therefore *of making the Government of the World a Mirror for the Government of a State*, being almoſt loſt, by reaſon, perhaps, of the difficulty for one man to compaſs both Philoſophies [g]; I have thought proper to make ſome little *Eſſay to revive it*, in treating of *one particular* [h], wherewith I humbly preſent your *Majeſty:* For as 'tis a *Form of Diſcourſe anciently uſed to Kings*; what *King* could it more properly be laid before, than a King ſtudious of joining contemplative and active Virtue together?

And particularly applied to the Union *of* England *and* Scotland.

7. Your Majeſty is the firſt *King*, who had the honour of being the *Corner-Stone* to unite theſe two mighty and warlike Nations of *England* and *Scotland*, under one ſovereignty and monarchy. It does not appear by the *Records* or *Memoirs* of any true *Hiſtory*; and ſcarce by any *fabulous Narration*, or *Tradition*, that ever this Iſland of *Great Britain* was from any antiquity united *under one King* before this day. And yet there are no *Mountains* nor Ridges *of Hills*; no Seas or *great Rivers*; no *diverſity of Tongue* or *Language*, that has invited, or provoked, this ancient ſeparation or divorce. The Lot of *Spain* was to have the ſeveral kingdoms of that *Continent*, except *Portugal*, united in a late age; and now in our age that of *Portugal* alſo: Which was the laſt that held out from being incorporated with the reſt.

[f] This is ſpoke with regard to the *King's firſt coming in.* See SUPPLEMENT II.

[g] For it is very rare that *Politicians* are good *Natural Philoſophers*; tho doubtleſs many excellent Rules and Examples of Government are eaſily derivable from *Phyſical Obſervations.*

[h] *Viz.* the Conſideration of the *Union* betwixt *England* and *Scotland*; ſo that the following Doctrine chiefly regards this particular *Union*; without taking notice of the other *Points of Government*; ſuch as *Conqueſt, Laws, Liberties, Civil Rites, Taxes, Trade, Religion*, &c. which might perhaps be advantageouſly treated in the ſame manner; by *copying Nature*, or the Wiſdom diſplay'd in the *Government of the World and its Parts.*

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reſt. It has likewiſe been the Lot of *France*, much about the ſame time, to have re-annex'd to that *Crown* the ſeveral *Dutchies* and *Portions* which were in former times diſſever'd. The Lot of this Iſland is the laſt, reſerved for your Majeſty's times, by the ſpecial providence and favour of GOD, who has brought you to this happy conjunction with great conſent of hearts, in the ſtrength of your years, and the maturity of your experience. It remains, therefore, that I ſet before your Majeſty the *Grounds of Nature, in the union and commixture of Bodies*; and the correſpondence they have with the *Grounds of Policy, in the conjunction of States* and *Kingdoms*.

That Force is ſtrengthened by union.

8. Firſt then, the Poſition that *Force is corroborated by Union*; being one of the common notions of the mind, needs no great induction or illuſtration. (1.) We find the *Sun* in *Leo* cauſes more vehement heats than when in *Cancer*; tho his Rays are more perpendicular in the latter Sign: The reaſon whereof, in great meaſure, has been truly aſcribed to the *conjunction* and *cor-radiation* of the Sun with four *Stars* of the firſt magnitude; *viz.* *Sirius*, *Canicula*, *Cor Leonis*, and *Cauda Leonis*. (2.) So the *Moon*, likewiſe, whilſt in *Leo*; is by ancient tradition ſaid to be at the *heart*; not for any affinity which that Place of the Heavens can have with that part of the human Body; but becauſe the *Moon* is then, thro' her conjunction and near approach to the aforeſaid *fix'd Stars*, in greateſt ſtrength and influence; and thence operates upon that part in inferior bodies, which is principal, and moſt vital. (3.) Thus again, *Waters* and *Liquors*, in ſmall quantity, eaſily putrefy and corrupt; but in larger quantities ſubſiſt long; from the ſtrength they receive by union. (4.) So in *Earthquakes*, the more general ones do little hurt, by reaſon of the united weight they offer to ſubvert; but limited and particular *Earthquakes* have often overturned whole *Towns* and *Cities*.

Exemplified by the Sun *in* Leo.

The Moon.

The durability of Liquors in large quantity.

And the little prejudice from general Earthquakes.

Union by victory exemplified in natural operations.

9. The *force of Union* therefore is evident: But the *manner of Union* may require a fuller illuſtration. It will not at preſent be pertinent to treat of *Union by Victory*, when one body merely ſubdues another, and converts the ſame into its own nature; extinguiſhing and expelling the parts it cannot overcome: As when the fire converts wood into fire; purging away the ſmoke and the aſhes, as matters unapt to inflame: Or when the body of a living creature converts and aſſimilates food and nouriſhment, purging off and expelling what it cannot convert. For theſe repreſentations anſwer in matters of Policy to *Union* of *Countries* by *conqueſt*; where the conquering State extinguiſhes, extirpates, and expells any part of the State conquered, which it finds ſo contrary, as not to be alter'd or converted. And therefore, leaving *violent Unions*, we will conſider only ſuch as are *natural*.

The Difference betwixt Compoſition and Mixture.

10. It is an excellent *Difference* which the beſt Obſervers of *Nature* make between *Compoſition* and *Mixture*, or *putting together* and *mingling*: The one being but a *conjunction of bodies in place*; the other of *quality* and *conſent*: The *one*, the *mother of Sedition* and *Alteration*; the other of *Peace* and *Continuance*; the one rather a *Confuſion* than an *Union*; the other properly an *Union*[1]. Therefore we ſee (1.) that thoſe Bodies call'd *imperfect Mixts*, continue not; but are ſoon diſſolved. For *example, *Snow* and *Ice*, which are

** Examples of imperfect Mixtures.*

[1] The due Proſecution of this Difference, in its phyſical Cauſes, might import *natural Philoſophy*, no leſs than *civil Policy*.

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are *Compoſitions* of *Air* and *Water*, eaſily ſever and diſſolve; the *water* cloſing together, and excluding the *Air*. (2.) So the three bodies celebrated by the *Alchemiſts*, as the *three Principles of Things*; *viz. Earth*, *Water*, and *Oil*; or *Salt*, *Mercury* and *Sulphur*, if united only by *compoſition*, or putting together, we ſee how weakly and rudely they incorporate: For *Water* and *Earth* make but an imperfect Slime; and tho forced together by agitation, yet upon a little ſtanding, the *Earth* ſubſides to the bottom. (3.) So when *Water* and *Oil*, are by agitation brought to an Unguent; yet after a little ſtanding, the *Oil* will float a-top: For theſe *imperfect Mixtures* continue no longer than they are forced; and ſtill in the end, the worthieſt gets uppermoſt. (4.) But the caſe is otherwiſe in *perfect Mixtures*. Thus the three bodies of *Earth*, *Water*, and *Oil*, when join'd in a *Vegetable* or *Mineral*, are ſo united, as that without great ſubtilty of art, and force of extraction, they cannot be ſeparated and reduced to the ſame ſimple bodies again. Whence the *difference between Compoſition* and *Mixture* is clearly this; that *Compoſition is the joining, or putting together of Bodies without a new* FORM; and *Mixture the joining, or putting together of Bodies, under a new* FORM. For the *new* FORM *is the common Link, without which the old ones will be at ſtrife and diſcord* [k].

Of perfect Mixtures.

The Doctrine applied to civil Policy;

11. To reflect this *Light of Nature* upon *Matters of State*: Two different kinds of Policy have been practiſed for *uniting and conjoining of States and Kingdoms*; the *one* is to *retain the ancient* FORM *ſtill ſevered, and only conjoin'd in Sovereignty*; the *other* to *ſuperinduce a new* FORM, *agreeable and convenient to the entire State*. The former of theſe has been the more uſual, and is the *eaſieſt*; but the latter the more *happy*. For whoever attentively revolves the *Hiſtories* of all Nations, and forms a true judgment upon them, will conclude that no States, beſides the *Roman*, were a good commixture. And this being the beſt State in Hiſtory, and the beſt Example to our preſent point, we will chiefly inſiſt upon it. In the *Antiquities of Rome*, *Virgil* brings in *Jupiter*, by way of Oracle or Prediction, ſpeaking of the *mixture of the Trojans* and the *Italians*, where *Jupiter* makes a kind of partition or diſtribution; *viz.* that *Italy* ſhou'd give the *Language* and the *Laws*; *Troy* a *Mixture of men*, and ſome *religious Rites*; and both people ſhou'd *meet* in the ſole name of *Latins* [l].

And illuſtrated in the Roman State.

12. Soon after the foundation of the City of *Rome*, the *Romans* and *Sabines* mingled upon equal terms: Wherein the interchange went ſo even, that, as *Livy* notes, the one Nation gave *name* to the *place*, the other to the *people*. For *Rome* continued the *name*, but the people were call'd *Quirites*; which was the *Sabine* word, deriv'd from *Cures*, the country of *Tatius*.

13. But

[k] Whoever wou'd proſecute this *Perſian Magick* in other parts of *Government*, ſhou'd imitate the Author in thus keeping a ſteady Eye both upon *Nature* and *Art*; or *Phyſicks* and *Politicks*, at the ſame time: A thing whereof there are numerous inſtances in his Writings; more particularly in the *Sapientia Veterum*. See SUPPLEMENT VII. Sect. III.

[l] *Sermonem Auſonii patrium moreſq; tenebunt:*
Utq; eſt nomen erit; commixti corpore tantum,
Subſident Teucri; morem, rituſq; ſacrorum
Adjiciam; faciamq; omnes, uno ore, Latinos.
Hinc genus Auſonio miſtum, quod ſanguine ſurget,
Supra homines, ſupra ire Deos pietate videbis. Æn. Lib. XII. ℣. 834, &c.

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13. But what is chiefly to be obſerved in the whole continuance of the *Roman* Government; they were ſo liberal of *Naturalization*, that in effect they made *perpetual Mixtures*. For the manner was to naturalize, not only particular perſons, but *Families*, *Lineages*, and even whole *Cities* and *Countries*. Whence at length *Rome* became a *Patria Communis*, or *common Country*, as ſome *Civilians* call it.

14. So we read of St. *Paul*, after he had been beaten with rods, and thereupon charged the officer with the violation of the privilege of a citizen of *Rome*; the captain ſaid to him, *Art thou then a Roman? That privilege has coſt me dear.* To whom St. *Paul* replied, *but I was ſo born*; and yet, in another place, St. *Paul* profeſſes that he was a *Jew* by tribe: Whence 'tis manifeſt that ſome of his anceſtors were *naturalized*; and ſo the Right was convey'd to him and their other deſcendants. Thus it was one of the firſt deſpites done to *Julius Cæſar*, that whereas he had obtain'd *Naturalization* for a City in *Gaul*, a Perſon of that City was beaten with rods by the conſul *Marcellus*. So we find in *Tacitus*, that in the Emperor *Claudius*'s time, the wilder part of the Nation of *Gaul*, call'd *Comata*, ſued to be made capable of becoming Senators and Officers of *Rome:* And after long Debate, it was carried that they ſhould be admitted. So likewiſe *Machiavel*, enquiring the cauſes of the growth of the *Roman* Empire, gives judgment, that there was none greater; for this reaſon, that *the State ſo eaſily compounded and incorporated with ſtrangers.*

15. 'Tis true, moſt States and Kingdoms have taken the contrary method; whence the enlargement of Empire and Territory became matter of burthen to them, rather than ſtrength[m]: And even kept alive the ſeeds and roots of revolts and rebellions for many ages; as we ſee by a freſh and remarkable Example in the kingdom of *Aragon:* Which, tho united to *Caſtile* by marriage, not by conqueſt, and ſo deſcended in *hereditary union* for more than a hundred years; yet becauſe it was continued in a *divided Government*, and not well *incorporated* and *cemented* with the other *Crowns*, now lately enter'd into a rebellion, on account of their liberties. *A contrary courſe in other States has produced contrary effects.*

16. The ſeveral parts of the FORM whereby *States* and *Kingdoms* become *perfectly united*, are, beſides the ſovereignty itſelf, four; *viz.* (1.) *Union in Name*; (2.) *Union in Language*; (3.) *Union in Laws*; and (4.) *Union in Employments.* *Four Particulars required to the perfect Union of States*; viz.

(1.) For *Name*; tho it ſeem but a ſuperficial and outward matter; yet it carries great impreſſion, and enchantment: The general and common name of *Græcia* made the *Greeks* always ready to unite (tho otherwiſe full of Diviſions amongſt themſelves) againſt other Nations, which they call'd *barbarous.* The *Helvetian Name* is no ſmall Cement to their *Leagues* and *Confederacies.* The *common name of Spain*, no doubt, has been a ſpecial means of the better union and conglutination of the ſeveral kingdoms of *Caſtile*, *Aragon*, *Granada*, *Navarre*, *Valencia*, *Catalonia*, and the reſt; comprehending *Portugal*, of late. (1.) *Union in* Name.

17. (2.) For *Language*, 'tis needleſs to inſiſt upon it; becauſe both your Majeſty's kingdoms are of one *Language*, tho of ſeveral *Dialects*; and the difference is ſo ſmall between them, as promiſes rather an Enrichment of *one Language*, than a Continuation of two. (2.) Language.

[m] See the Fable of *Perſeus* explain'd in the *De Augmentis Scientiarum*, Sect. II. See alſo Sect. XXV. of that Work, and the *Sapientia Veterum*, SUPPLEMENT VII. Sect. III.

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(3.) Laws, *under which come Privileges.*

(3.) For *Laws*, in general; which are the principal *ſinews of Government*; they may be of three kinds; *viz.* (1.) *Jura*, which I term *Freedoms* or *Privileges*; (2.) *Leges*, or *Judicial Laws*; and (3.) *Manners*. For *Freedoms and Privileges*; they were among the *Romans* of four kinds or degrees; *viz.* (1.) *Jus Connubii*; (2.) *Jus Civitatis*; (3.) *Jus Suffragii*; and (4.) *Jus Petitionis*, or *Honorum*. 1. *Jus Connubii* is a thing at preſent out of uſe: For *Marriage* is open betwixt all Diverſities of Nations. 2. *Jus Civitatis* anſwers to what we call *Denization*, or *Naturalization*. 3. *Jus Suffragii* anſwers to our *Voice in Parliament*; and 4. *Jus Petitionis* anſwers to our place in *Council*, or *Office*. The *Romans* afterwards ſeparated theſe *Freedoms*; granting *Jus Connubii, ſine civitate*; *Civitatem ſine Suffragio*; and *Suffragium ſine Jure Petitionis*; which was commonly with them the laſt

Judicial Laws.

18. For thoſe we call *Judicial Laws:* 'Tis a matter of curioſity and inconvenience to endeavour the extirpation of all particular *Cuſtoms*; or to draw all Subjects to one place of *Judicature* and *Seſſion*. 'Tis ſufficient that there be an Uniformity in the principal and fundamental *Laws*, both *Eccleſiaſtical* and *Civil*.

And Manners.

19. For *Manners*; a conſent in them is to be induſtriouſly ſought, but not enforced: As nothing breeds ſo much pertinacity in a People to hold their *Cuſtoms*, as ſudden and violent Attempts to change them.

(4.) Employments.

20. And for *Employments*; it requires no more, than to carry an indifferent hand, and ſhew no favour to one Nation more than another[n].

Two capital Rules of Union in Government drawn from Nature; *viz. To allow Time.*

21. There remains only to remember, from the *Grounds of Nature, the two conditions of perfect Mixture*; the firſt whereof is *Time*. The natural Philoſophers ſay well, *that Compoſition is the work of Man; but Mixture the work of Nature. For 'tis the office of man to make a fit application of bodies together: But the perfect fermentation and incorporation of them muſt be left to Time* and *Nature*; and all unnatural haſtening does but diſturb the Work, not promote it. So after the *Graft* is put into the Stock and bound up; it muſt be left to *Time* and *Nature* to make that *continuous*, which at firſt was but *contiguous*. And 'tis not any conſtant preſſing or thruſting of the Parts together, that will haſten *Nature's Seaſon*; but rather hinder it. So in *Liquors*, thoſe Commixtures which are at the firſt troubled, grow afterwards clear and ſettled, by the benefit of *Reſt* and *Time*.

And ſuffer the greater to attract the leſs.

22. The *Second Condition* is, that *the greater draw the leſs*. So when two Lights meet, the greater darkens and dims the leſſer. And when a ſmaller River runs into a larger, it loſes both its *Name* and *Stream*. And hereof we ſee an excellent Example in the Kingdoms of *Judah* and *Iſrael*. The Kingdom of *Judah* contained two Tribes; the Kingdom of *Iſrael* ten. King *David* reigned over *Judah* for certain Years; and after the Death of *Iſhboſheth*, the Son of *Saul* likewiſe obtain'd the Kingdom of *Iſrael*. This *Union* continued in him, and in his Son *Solomon*, ſeventy years, at leaſt, between them both: But becauſe the ſeat of the Kingdom was kept ſtill in *Judah*, and ſo the leſs ſought the greater; upon the firſt occaſion offer'd, the Kingdom broke again, and ſo continued ever after[o].

SUP-

[n] Might not the ſeveral Caſes abovementioned be exemplified, and illuſtrated, by apt Phyſical Obſervations?

[o] This Piece is only propoſed as a *Specimen*, not a finiſh'd Work; and may in ſome meaſure be ſupplied from the *Doctrine of Government*, deliver'd in the *De Augmentis Scientiarum*, Sect. XXV. the *Sapientia Veterum*, SUPPLEMENT VII. Sect. III. the *Piece of War*, SUPPLEMENT XII. and the *Prudent Statesman*, SUPPLEMENT XIII.

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SUPPLEMENT IX.

A

SPECIMEN

OF

ANIMATED ASTRONOMY;

OR,

An ESSAY *towards a* PHILOSOPHICAL HISTORY *of the* HEAVENS.

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PREFACE.

THIS is an imperfect Piece, and, doubtless, never intended by the Author to be publish'd; till it had, in his usual manner, undergone a strict Correction.

The Original *makes part of the* Scripta, *or the Author's* Latin Posthumous Pieces *publish'd by* Gruter; *and is inconsiderately tack'd to certain imperfect Chapters of the* De Augmentis Scientiarum, *under the Title of* Descriptio Globi Intellectualis. *The* Design, *however, appears by the Introduction, to have been compleatly form'd in the Mind of the Author; tho not executed in all its Parts; nor perfectly indeed in any one: For the first* Part, *which is the only one we have of it, wants the* Uses *promised in the* Introduction. *Had it been finish'd, it might have nobly supplied the* Animated Astronomy *set down for deficient in the* De Augmentis [P]; *and, as it now stands, it exhibits the whole Plan, executes some considerable Proportion, and instructs a less able Architect to carry on the Work.*

The Author proceeds in the cautious way of Enquiry, by Questions, *and Arguments on both sides; without undertaking to determine any thing in a Subject that lies so remote from direct Experiment. This Method has, perhaps, been too much neglected by Writers in* Astronomy; *for Questions are in the power of the Querist, and may gradually lead to great and solid Discoveries; whilst a dogmatical Procedure, pretending to over-rule things, is often frustrated, or falsify'd by farther Enquiry.*

[P] See the *De Augmentis Scientiarum*, Sect. IV. 4, &c.

A SPE-

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A SPECIMEN OF ANIMATED ASTRONOMY[q], &c.

INTRODUCTION.

1. THE *History of the Celestial Bodies* should be simple, and unmixed with Mens *Conceits*, or *Opinions*; and candidly drawn up, without any Tincture of Præoccupation, or fondness for *Theory*; so as, separately and nakedly, to exhibit those Phænomena, which are, at present, bundled and dress'd up into *Theories* and *Systems*. We would, therefore, have this *History* wrote in such a manner, as if no Decree had pass'd; nor any thing been dogmatically asserted in all *Astronomy* and *Astrology*: And only the Observations, in both, had been taken, and the Experiments made, and set down with Accuracy, Judgment and Perspicuity. But there is nothing of this kind found among us[r]. *Pliny* has only glanced at the Subject cursorily, and somewhat rudely. But perhaps a tolerable *History of the Celestial Bodies* might, with the assistance of the modern Observations, be drawn from the Works of *Ptolemy*, *Copernicus*, and other learned *Astronomers*; only such a *History* would entirely want the *Light of Experiments*[s]. *Nakedness and Simplicity, required in the History of the Heavens.*

2. It

[q] For the reason of the Title, See *De Augmentis Scientiarum*, Sect. IV. 4, &c.

[r] It were to be wish'd that more of it cou'd be found at present: But Men seem now so thoroughly persuaded, that they have a true *Astronomical System*, on a mathematical Foundation, as scarce to admit of its being called in question. However, it may not be amiss for Posterity to receive our *Doubts* as well as our *Doctrines*.

[s] Which are what must shew the true Causes of things, in the *System* and *Frame of the Universe*.

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The Design of this Enquiry is forming a genuine Philosophy of the Heavens.

2. It may, perhaps, seem strange, that we should here bring the *Systems* that have been raised, improv'd, and enlarg'd with so much Labour, back to their original, artless forms, and simple observations: But we have a much greater *Work* in view; tho without any intention of losing the least of *former Discoveries*. *For we here propose, not only the business of Astronomical Calculations*, and sure *Astrological Predictions*; but a *genuine Philosophy*, for informing the Understanding; not only a discovery of the *motions* and *revolutions* of the celestial Bodies, but also their substance, influence, powers and qualities of all kinds: And this according to the natural and sound reasons of things themselves; without levity, credulity, or any superstitious regard to Traditions: Intending such a *Philosophy* as shall not invent Solutions, plausibly adapted to the *Phænomena*; but shew what is the real Fact, or Truth, in Nature [s].

Theories are endless, but Truth simple and one.

3. 'Tis easy to perceive, that both they who assert the *Rotation*, and they who assert the *Stability of the Earth*, plead and produce *Phænomena* on both sides, with almost equal uncertainty. But the Author of the new *Astronomical System* of our time [t], who makes the *Sun* the centre of the secondary movement; and the *Earth* the centre of the primary; as if the *Planets* peform'd their Revolutions round the *Sun* (which some of the Ancients suspected of *Mercury* and *Venus*) would have excellently solved the difficulty, had he verified and confirmed the supposition [v]. And we make no question but other *Constructions* and *Theories* of like kind, may be invented by men of a sharp and subtile genius; but the Persons who offer us such *Theories*, are not greatly concerned, whether they be *perfectly true*; and only suppose them for the *convenience of calculation*, and the *forming of Astronomical Tables* [w]: Our Design, therefore, differs greatly from theirs; as tending not to the discovery of *Theories*, and *real Solutions*, which may be various and numerous; but the *truth of things*, which is simple and one: And to this discovery of Truth, the way is open'd by a genuine and pure *History of Phænomena*; but block'd up by one that is perverted and infected with Opinions.

The Enquiry to be founded on the immutable Laws of Nature.

4. We must, however, openly profess, that our hope of discovering the truth, with regard to the *Celestial Bodies*, depends not solely upon such a *History*, raised after our own manner; but much more upon the observation of the *common Properties*, or the *Passions* and *Appetites of the matter of both Globes*. For as to the Separation that is supposed betwixt the *ætherial and sublunary Bodies*, it seems to us no more than a Fiction, and a degree of Superstition, mix'd with Rashness: For it is certain, that numerous Effects,

[s] Doubtless this is a just and worthy *End* of the *Enquiry*: But what true steps have been taken towards this End; and how far we are at present from it, may deserve Consideration.

[t] Viz. *Tycho Brahe.*

[v] Was not this Supposition thought to be well verified, and confirmed, to many in its Time?

[w] This seems rather a *candid Construction* of the Author, than the *Intention* of the *Theorists*; who generally desire the World should take their *Solutions* for true *Discoveries*. See hereafter, Sect. I. 9.

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Effects, as *expanſion*, *contraction*, *impreſſion*, *yielding*, *collection*, *attraction*, *repulſion*, *aſſimilation*, *union*, and the like, have place, not only here upon the ſurface; but alſo in the bowels of the Earth, and regions of the Heavens[x]. And no more faithful guide can be uſed or conſulted, than theſe *properties of matter*, to conduct the underſtanding to the depths of the Earth, which are abſolutely not ſeen at all, and to the ſublime regions of the Heavens, which are generally ſeen, but falſely; on account of their great *Diſtance*, the *refraction of the Air*, the *imperfection* of *Glaſſes*, &c. The Ancients, therefore, excellently repreſented *Proteus* as capable of various ſhapes, and a moſt extraordinary Prophet, who knew all things, both the paſt, the future, and the Secrets of the preſent: For he who knows the *univerſal properties of Matter*, and by that means underſtands what may be, cannot but know what has been, is, and ſhall be the general ſtate and iſſue of things[y]. Our chiefeſt hope and dependance in the conſideration of the *Celeſtial Bodies*, is therefore placed in *phyſical Reaſons*; tho not ſuch as are commonly ſo call'd; but thoſe *Laws*, with regard to the *Appetites of Matter*, which no diverſity of place or region can aboliſh, break thro', diſturb, or alter[z].

5. We would not, however, on this account, have Mens Diligence at all ſlacken'd, in obſerving and recording the Phænomena of the celeſtial Bodies; for when a larger ſtock of theſe ſhall be procured, every thing afterwards will be the readier and better eſtabliſh'd. And here we cannot but congratulate Mankind upon the care, induſtry and alacrity of certain Artificers, and Men of Letters; who have lately attempted a new intercourſe or traffick with the celeſtial Bodies, by the means of *Teleſcopes*, and *optical Inſtruments*; as it were, by ſo many boats and ſhips in the way of Navigation[a]. This is an attempt, which we judge extremly noble, and worthy of Mankind; both in its beginning and end: the rather, becauſe the obſervers are no leſs commendable for their fidelity, than their enterprize; as having ingenuouſly and clearly laid down how each Particular appeared to themſelves. All that remains, therefore, is only for them to perſevere with *great Severity of Judgment*, and *change of Inſtruments*; *increaſing the number of the evidence, or eye-witneſſes*; *and to try each particular over and over again*, in different manners; and *laſtly to raiſe objections to themſelves*, and open and explain to others, all the *Objections that may be brought on the contrary ſide of the queſtion*, *without deſpiſing even the ſlighteſt ſcruple*; *leſt it ſhould happen to them*, *as it did to* Democritus, *in the caſe of the figs*, *which had a honey-taſte*; *wherein the old Woman proved wiſer than the Philoſopher*:

An Exhortation to proſecute Teleſcopical Obſervations, &c.

[x] On this ſeems founded Sir *Iſaac Newton*'s third *Regula Philoſophandi*; viz. *That thoſe Qualities of Bodies which are incapable of Augmentation and Diminution, and hold true in all the Bodies whereon Experiments may be made, ought to paſs for general Qualities, reſiding in all Bodies indifferently.* See his *Principia*, Lib. III. *in init.* See alſo hereafter, Sect. I. 1.

[y] See an Attempt towards enumerating theſe *univerſal properties of Matter* in the *Sylva Sylvarum*; under the *Article* CHARACTERS OF MATTER.

[z] Such as *Reſiſtance*, *Gravity*, *Impenetrability*, &c.

[a] How far Teleſcopes and other optical Inſtruments are improvable to the purpoſes of Aſtronomy, has not, perhaps, been hitherto fully conſider'd, eſpecially Sir *Iſaac Newton*'s *Reflecting Teleſcope*, with regard to the *Metal* and the *Structure*.

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For a mighty ſlender and ridiculous Error may be the cauſe of great and wonderful Speculations [b].

Three Particulars to be regarded in a Hiſtory of the Heavens; viz.

(1.) The End.

6. In order to lay the foundation for a *pure and genuine Hiſtory of the Celeſtial Bodies*, we will (1.) propoſe certain *capital philoſophical Queries*; annexing thereto ſuch Uſes, as may probably be drawn from a conſideration of the *Celeſtial Phænomena:* And this to ſhew the ſcope of ſuch a *Hiſtory* as we propoſe; that they who would aſſiſt in its compilement, may perceive its tendency, and all along bear in mind the Queſtions; whereby they may be directed to procure ſuch a Hiſtory as ſhall ſerve to determine theſe *Queſtions*; and afford other the like fruits and uſes for the ſervice of Mankind. The *Queſtions* we mean are ſuch, as, according to the proper office of *Hiſtory*, *enquire into the Facts of Nature*; and not into their *Cauſes*. (2.) In the next place, we ſhall diſtinctly ſhew wherein the *Hiſtory of the Heavens* conſiſts; what are its parts; what things are to be learn'd, or carefully ſought after; what experiments to be made, and procured; and what obſervations to be uſed and conſidered: Thus laying down, as it were, certain *Heads of Induction*, or *Articles of Enquiry*, concerning the celeſtial Bodies [c]. (3.) Laſtly, we ſhall give Directions, how the things ſought for ſhould be conſider'd, when obtain'd; how they are to be exhibited; and how recorded: Leſt, otherwiſe, the diligence uſed in the firſt Enquiry, ſhould come to nothing; or, what is worſe, the ſucceeding ſtructure be built upon a weak and treacherous foundation [d].

(2.) The Matter.

And (3.) The Manner.

SECT. I.

PHILOSOPHICAL QUESTIONS *about the* Syſtem of the World, *to be clear'd up in the* PARTICULAR HISTORY OF THE HEAVENS.

The Reaſons for proceeding here by an Induction of Queſtions.

1. MANY will here ſuppoſe me raiſing the Aſhes of Queſtions long ſince bury'd, to join them with others of later Date: But as the *Philoſophy* we at preſent enjoy, about the *Heavens*, has no ſtability in it; as 'tis our fix'd Reſolution to ſubmit every thing to our new

[b] Let it, therefore, be freely queſtion'd even at this Day, whether the Earth has a *Diurnal* and *Annual Rotation?* Whether all the Stars are *ſolid Bodies?* Whether a *Comet* may occaſion a *Deluge?* Whether we have a juſt *Theory of the Moon?* Whether the *Cauſe of the Tides* is juſtly aſſign'd? *&c.* And this, if it were only to procure more rigid and perfect *Demonſtrations:* For theſe things are not, perhaps, ſo perfectly ſettled, as neceſſarily to exclude all modeſt, and ſcientifical Doubting.

[c] After the ſame manner, perhaps, as the Author's particular Enquiries into *Winds*, *Life* and *Death*, &c. are conducted.

[d] Here are three Parts propoſed, but only the firſt is proſecuted, and that imperfectly, as mention'd in the *Preface*. 'Tis pity the other two were not finiſhed: For, tho' Aſtronomy has been ſtrenuouſly cultivated ſince the Author's Time; yet the manner of Treatment here laid down, has not been ſufficiently obſerved.

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new Teſt of *Examination*, and *genuine Induction* [e]; and as, perhaps, if any *Queſtions* were left untouch'd, ſo much the leſs pains and diligence would be employ'd in the *Hiſtory*; becauſe it might ſeem needleſs to enquire into things, whereof no QUESTION has been ſtarted; we find it neceſſary to take in all the QUESTIONS, which the Nature of the thing holds out to us. Beſides, we are the more willing to admit of *Queſtions* here; as being leſs certain of their *Deciſion*, by our method; and not ſeeing clearly into the Iſſue [f].

2. Let the *firſt* QUESTION therefore be this. IS THERE ANY SYSTEM? Or, *Is the Univerſe ſpherical in its whole, and having its proper centre; or do the particular Globes of the* Earth *and* Stars, *lie ſcattered, and adhering each to its own ſeat, without any* Syſtem, or *common Centre?* *Queſtion (1.) Whether there be any Syſtem?*

The Schools of *Democritus* and *Epicurus* boaſted, that *their Founders had broke down the walls of the World*; but this was no exact conſequence of their Doctrine: For as *Democritus* held Matter, or an infinite quantity of *Seeds*, finite in properties and powers, to be in a perpetual agitation; and by no means fixed from eternity; he was oblig'd, by the force of this *Tenet*, to maintain Worlds of various figures, ſubject to Riſe and Deſtruction; ſome of them better, and ſome of them worſe regulated, and put together; and alſo rough Draughts and imperfect Eſſays of worlds. But admitting all this, the portion of matter deſtin'd to form the World within our ſight, might have a *ſpherical Figure*; ſince all his Worlds muſt neceſſarily be of ſome Figure. For tho there can be no middle in Infinity, yet a round Figure may ſubſiſt in the parts of Infinity, as well in a World as in a Ball. *The Opinions for.*

3. The Opinion which deſtroys the exiſtence of a Syſtem, is that of *Heraclides*, *Ecphantus*, *Nicetas*, *Philolaus*, *Gilbert*, and all thoſe, except *Copernicus*, who make the *Earth* a *moving Planet*. For, according to this Opinion, the *Planets*, and all the numberleſs fixed Stars, both viſible and inviſible, have each its own Sphere and primary *Form*, thro the vaſt expanſe of the *Heavens*, where they are ſprinkled like *Iſlands* in the *Ocean*, and revolve not about a common Centre, but each in its own Orbit; ſome ſimply, and others with a ſmall progreſſive motion of their Centres. What appears moſt exceptionable in this *Opinion*, is, that it takes away reſt or immobility from Nature: For it ſhould ſeem, that as there are revolving *The Opinions againſt.*

[e] As laid down in the *Novum Organum*.

[f] The Author here appears to intimate ſome Diſtruſt of the Method of his *Novum Organum*, in deducing the ſtrict *Philoſophical Hiſtory* of the *Heavens*; I ſuppoſe on account of the *Difficulty*, or *apparent Impoſſibility* of making the proper Experiments upon the *Celeſtial Bodies*, and procuring *Crucial Inſtances*. And, perhaps, more Caution is here required, than ſome of the modern mathematical, and mechanical Philoſophers have uſed: For what certainty is there, that, becauſe all Bodies *gravitate* here on Earth, therefore the Stars and Sun muſt gravitate, after the ſame manner, in the Heavens; before 'tis proved, that the Stars and Sun are more than Flame? 'Tis true, there are other ways of coming at the Diſcovery, as Sir *Iſaac Newton* has ſhewn: But this particular *Induction* ſeems of itſelf too haſtily made; and may deſerve more *Intermediates*, if procurable, to render it perfectly ſafe and concluſive. See Sir *Iſaac Newton*'s third *Regula Philoſophandi*, as illuſtrated at the beginning of the third Book of his *Principia*. See alſo above, Sect. IV. and compare the whole with the Second Part of the *Novum Organum*.

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Bodies in the Univerſe, that is, Bodies carried with an infinite, and perpetual Motion; ſo, on the contrary, there ſhould be ſome Body at reſt; a middle Nature [g] betwixt the two, being that of Bodies in rectilinear Motion.

The leading Queſtions that determine it.

4. But this *Queſtion*, *Whether there be a Syſtem or not*, may receive a determination from a deciſion of theſe points; *viz.* (1.) Whether the *Earth* move, or ſtand ſtill [h]. (2.) *Whether the ſubſtance of the fixed* STARS *be of a* SOLID *or* FLAMY *Nature* [i]. And, (3.) *Whether the interſtellar ſpaces be corporeal, or empty of Matter* [k]. For, 1. If the *Earth ſtands ſtill*, and the *Heavens revolve*, with a diurnal Motion, then doubtleſs, there is a *Syſtem* [l]. But if the *Earth* revolve, it is not thence perfectly ſhewn, that there is no *Syſtem*; becauſe there may be another centre of the *Syſtem*, ſuppoſe the *Sun* [m]. 2. If only the Globe of the *Earth* be a denſe and ſolid Body, the matter of the *Univerſe* may ſeem to come together, and be condenſed at the Centre [n]. But if the *Moon*, or other of the Planets, be found to conſiſt of a denſe and ſolid Matter; then denſe Bodies ſhould ſeem not to collect to any Centre; unleſs diſperſedly, and, as it were, fortuitouſly. 3. Laſtly, If the *interſtellar Spaces* be a *Vacuum*, then each *Sphere* will have firſt finer *Effluvia*, and afterwards a *Vacuum* about it; but if thoſe *Spaces* are fill'd with Matter, then there will ſeem to be a collection of the denſer Bodies in the middle [o]; whilſt the rarer are thrown to the ſurface [p].

The Uſe of coupling Queſtions *together.*

5. 'Tis of great uſe in the *Sciences* to underſtand the *coupling of Queſtions*; becauſe ſome of them contain *Hiſtory*, or matter of *Induction*, for Deciſions; and ſome of them do not.

6. Sup-

[g] The later Diſcoveries, ſo far as they go, ſeem rather to ſhew that there is no ſuch thing as abſolute Reſt in Nature; unleſs we allow the fixed Stars to be at reſt: But whether the whole viſible Syſtem of things be at relative Reſt, or in uniform rectilinear Motion, through an infinite *Expanſum*, ſeems not ſatisfactorily determined. See Sir *Iſaac Newton's Principia*, Lib. III. Prop. XI, XIV, &c.

[h] Strong Arguments are produced by the Moderns, both for the Diurnal and Annual *Motion* of the *Earth*; but perhaps they ſtill require to be verified. Thus the riſing of the *equatorial Parts*, and the ſinking of the *polar*, if well confirm'd by Experience, may prove a *Crucial Inſtance* for the Diurnal Motion; as the exact Determination of the Parallax of the fixed Stars, may, perhaps a Demonſtration of the *Annual*. See the Attempt of Dr. *Hook to prove the Motion of the Earth by Obſervations*: Which has alſo been attempted ſince by others, but without Succeſs. See Sir *Iſaac Newton's Principia*, Lib. III. Prop. XX.

[i] This Point ſtill ſeems to remain conjectural.

[k] They appear, by Sir *Iſaac Newton's Experiments* and *Calculations*, neither an abſolute *Vacuum*, nor conſiderably charged with Matter. See the *Principia*, Lib. III. Prop. VI.

[l] And has the Earth, or the Centre thereof, for its *Centre*.

[m] Which comes nearly up to the Caſe lately diſcover'd by Sir *Iſaac Newton*.

[n] See Sir *Iſaac Newton's Principia*, Lib. III. Prop. XX. p. 386.

[o] See again the *Principia*, Prop. XX, &c.

[p] The preſent Diſcoveries in *Aſtronomy* ſcarce reach beyond that commonly called the *Solar Syſtem*; including the *Earth*, *Moon*, *Planets*, and *Comets*: Which appear to make a *Syſtem*, in the Senſe of the Author; unleſs we require the utmoſt Preciſion; the common *Centre of Gravity* of the *Earth*, *Sun*, and all the *Planets* and *Comets*, being its *Centre*, and not differing much from the *Centre of the Sun*. See Sir *Iſaac Newton's Principia*, Lib. III. Prop. XII. Corol. and Prop. XIV.

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6. Supposing a *System*; the next QUESTION will be, WHAT IS THE CENTRE OF THE SYSTEM? *Question (2.) What is the Centre of the System?*

For if any one of the *Globes* must be in the place of a Centre, there are two principal ones which bid fair for this purpose; *viz.* the *Earth* and *Sun*. The *human Sight* and *inveterate Opinion* are on the side of the *Earth* in this Question: But the greatest Reason here is, that as all dense Bodies come into a little space, but rare ones diffuse themselves wider; it should seem to follow, that Matter must contract itself about the middle part of the World, as the Area of a Circle contracts itself to its Centre: This being, as it were, the proper and only Seat of dense Bodies. *The Arguments for the Earth.*

7. On the other side; it makes for the *Sun*, that the thing which has the greatest efficacy in the *System*, should have the chiefest place assigned it; so as to act commodiously, and diffuse itself thro' the whole: But as the *Sun* appears to vivify, and animates the World, by imparting its Heat and Light thereto; it should seem very justly and regularly placed in the middle of the World. *The Argument for the Sun.*

8. Another Argument on the same side is, that the *Sun* manifestly has its Attendants or *Satellites*; viz. *Venus* and *Mercury*, and, according to the Opinion of *Tycho*, all the other *Planets*; whence the *Sun* really seems to be the Centre, or, in some respects, to perform the Office thereof; and thus, consequently, comes the nearer to being the *Centre* of the whole; according to the Opinion of *Copernicus* [q].

9. But there are many and great Inconveniencies found in the *Copernican System:* For (1.) It must be accounted a great one to load the *Earth* with three different Motions. (2.) It likewise seems unwarrantable to separate the *Sun* from the Choir of the *Planets*; wherewith it has so many Properties in common. (3.) To introduce so much immobility into Nature, by supposing the *Sun* and *fixed Stars* immoveable; whilst they are, of all others, the most lucid and shining Bodies. (4.) To make the *Moon* adhere to the Earth, as it were in an *Epicycle*; with other Particulars of like kind; which seem feign'd, or only suppos'd in Nature, merely for the sake of Calculation [r]. *Inconveniencies in the Copernican System.*

10. But if the *Motion of the Earth* be allow'd; it seems juster, that there should be no *System* at all; or that the *Celestial Globes* are sprinkled indifferently up and down the Heavens, rather than that there should be a *System* *The Earth's Motion urged against a System.*

[q] This has a great Agreement with the *Inductive Enquiry* of Sir *Isaac Newton* upon the same Subject. See *Princip.* Lib. III. Prop. XII. and XIII.

[r] It may deserve a particular Regard, that Mathematicians, when they apply to Astronomy, or other Branches of Physicks, are apt to put off *neat Solutions of Phænomena* for *Demonstrations*; especially if such *Solutions* afford easier and exacter Methods of Calculation, so as to make *all come right*, as they phrase it. Thus, perhaps, the stress of the Arguments at present in use, for proving the truth of the *Copernican System*, lies chiefly in the *Concinity*, and *Precision*, which that *System* affords in Calculation, and the full Solution of all the Phænomena of the celestial Bodies: Whilst, at the same time, that System may *possibly* be false; tho these Calculations prove exact, and the Solutions adequate. The treacherous Faculty of the Mind should be carefully watch'd. See the *Novum Organum*, Part I. Sect. II. and III.

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Syſtem with the *Sun* for its Centre[r]. And this Opinion was chiefly receiv'd and approv'd by Antiquity, and former Ages: For the *Opinion of the Earth's Motion is no new one, but borrow'd from the Ancients*[s]; tho it be *quite new to make the Sun the Centre of the World, and immoveable:* And of this *Copernicus* is the original Author.

Queſtion (3.) Whether the fixed Stars are not placed at different Altitudes?

11. The next QUESTION concerns the *Dimenſions of the Syſtem*; tho not ſo as to take any perfect meaſure thereof; but only to aſcertain, *Whether the ſtarry Heavens be like one continued Region, Orb, or Sphere; or whether the fixed Stars are ſome of them immenſely higher than others?* For 'tis impoſſible they ſhould be exactly all of the ſame height: As the Stars are, doubtleſs, ſituate, not like Spots upon a Plane, that have only a Dimenſion in Surface; but as entire, large, and deep Globes. And as they are form'd of ſuch different Magnitudes, ſome of them muſt neceſſarily bulge out either upwards or downwards, more than others; and then one Surface cannot poſſibly take them all in, either on their upper or lower Parts. And if this be the Caſe in the parts of the *fixed Stars*, it would be raſh to aſſert, that the Stars, in their entire Body, are not ſome of them higher than others. But allowing this; yet there may be ſuppoſed a certain definite, tho conſiderable, thickneſs of the Region called the *Sphere of the fixed Stars*; which may, in ſome meaſure, terminate thoſe prominences and degrees of height: For we ſee in the Apogeès and Perigeès of the Planets; each of their Orbits has a remarkable depth, wherein they aſcend and deſcend[t]. But the meaning of the QUESTION is only, *Whether ſome fixed Stars are higher than others; and, as it were, in different Orbs, like the Planets?*

The Anſwer upon Suppoſition of the Earth's Stability.

12. And this QUESTION alſo has a relation to that other of the *Motion* or *Reſt of the Earth:* For if the *Stars* have a diurnal Rotation, round the *Earth*; and all of them move with an equal Velocity; and as the Planets, according to their ſituation higher or lower, differ in velocity and ſlowneſs of Motion; it ſeems probable, that the *fixed Stars*, being equal in the velocity of their Motion, are alſo placed in one and the ſame Region of Æther; the depth whereof being ſuppos'd very conſiderable, may, yet, not be ſo great as to cauſe a difference in their Velocity: But all things may ſeem to move together thro that whole Region, as if link'd and bound to one another by a natural Sympathy: Or, at leaſt, the difference may be too ſmall to become viſible to us, by reaſon of the diſtance.

Upon the Suppoſition of the Earth's Motion.

13. But if the *Earth move*, the *Stars* may either ſtand ſtill, according to the Opinion of *Copernicus*; or what ſeems much more probable, they may, as *Gilbert* firſt advanced, each of them have a Rotation about its own Axis, in its own place, without any motion of their Centres; in the ſame

[r] It is not to be expected, that this Argument ſhould have any Weight, at preſent. See Sir *Iſaac Newton's Princip.* Lib. III.

[s] *Nicetas* of *Syracuſe* is ſaid to be the *firſt who diſcover'd the diurnal Motion of the Earth*; and *Philolaus* the firſt that diſcover'd its *annual Motion about the Sun.* See *Cicero. Queſt. Tuſcul.* Lib. II. *ad finem*, and *Plutarch.* Lib. III. *De Placit. Philoſoph.* Cap. 11. & 13. See alſo, *Laert.* Lib. VIII. Cap. 85. and *Archimed. Arenar. in init.*

[t] *Viz.* the Obliquity of the Planets Orbits.

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ſame manner as the *Earth* itſelf, if its *diurnal Motion* were freed from thoſe two additional ones aſſigned by *Copernicus*[v]. But which ever be the Caſe, the *fixed Stars* may be ſome of them higher than others; ſo long as they eſcape our ſight[w].

14. The Fourth QUESTION may be concerning the *Connexion of the Syſtem*. This QUESTION admits of three Caſes; *viz.* (1.) Vacuity; (2.) Contiguity; and (3.) Continuity. Let it, therefore, *firſt* be enquired, *Whether the interſtellar Spaces are empty of Matter*. *Gilbert* is expreſs in the Affirmative; and ſo ſeem to be ſome of the Ancients, who conceived, that the *Stars* were diffuſed without any *Syſtem*; but eſpecially ſuch of them as aſſerted compactneſs of Body in the *Stars*. The whole of the Opinion is, (1.) that both the *Stars* and *Earth* conſiſt of a denſe and ſolid Matter; (2.) that they are immediately ſurrounded with a certain kind of Bodies, ſomewhat of the ſame nature with the Globes themſelves, reſpectively; tho more imperfect, languid, and attenuated; being no other than the Effluvia and Exhalations of the Globes themſelves, ſuch as are Vapours, and the Air, with reſpect to the *Earth*; (3.) that theſe Effluvia did not reach to any great diſtance, around each Globe; and (4.) that all the other immenſe intermediate *Spaces* were void of Matter. *Queſtion (4.) How is the Syſtem connected? Whether the interſtellar Regions are void of Matter?*

15. This Opinion ſeems countenanced from hence, that the Bodies of the *fixed Stars* are viſible to an immenſe diſtance: For if that entire Space, thro which we ſee them, were fill'd, eſpecially with ſuch Bodies as muſt needs be very unequal in point of Rarity and Denſity, the Rays of Light would be ſo refracted, as never to arrive at our Eyes: Whereas, if much the greateſt part of that Space be empty; the Light, 'tis probable, will come the eaſier to us. However, the Determination of this Queſtion will, in good meaſure, depend upon what we ſhall ſoon propoſe about the *ſubſtance of the Stars*[x]: For if their ſubſtance be *ſolid*; it ſhould ſeem, that *Nature* has buſied herſelf with little more than the *Globes* themſelves, and their *Atmoſpheres*; and left the intermediate Spaces deſolate, and forſaken: Whence it might appear probable, that all the *Globes are denſer about their centres*, and *rarer towards their ſurfaces*[y]; ſo that their *Atmoſpheres, at length, ceaſing, they terminate in Vacuity*[z]. *For.*

16. On

[v] This approaches neareſt to the modern Opinion, which ſuppoſes the *fixed Stars* to be every one of them a Sun, and the Centre of a *Syſtem* like the ſolar. This indeed requires an immenſe quantity of *Space*; but Space is ſaid, in its nature, to be infinite. Such kind of Excurſions are highly pleaſing; and gratify the Mind, which delights in ranging at large, thro' *infinite Regions*; but ſhould not ſober *Philoſophy* here uſe the Rein? See Sir *Iſaac Newton's Princip.* Lib. III. *Schol. General. in init.*

[w] There are ſeveral curious *Obſervations*, and ſublime *Speculations*, relating to this Queſtion, in the *Philoſophical Tranſactions*. See particularly N° 364. pag. 22. See alſo, Sir *Iſaac Newton's Princip.* Lib. III. Prop. XIV, &c. and the *Queries* at the end of his *Optieks*.

[x] See below, SECT II.

[y] Is not this the Caſe in the *Earth*, and all the *Planets* and *Comets*? See *Newton. Princip.* Lib. III. Prop. XX, &c.

[z] Sir *Iſaac Newton* has proſecuted this Enquiry by a variety of accurate Experiments, made with *Pendulums*, and falling Bodies, in different Mediums. The Reſult whereof, ſo far as relates to the preſent Purpoſe, is, (1.) that the Reſiſtances of equal glo-

Againſt.

16. On the contrary; if the *fixed Stars* be of a rarified and flaming Subſtance[a], 'twill appear, that the nature of *Rarity* is not only a decreaſe of Denſity, but, of itſelf, a powerful and *primary thing*; no leſs than the nature of *Solidity:* And that it takes place both in the Air, the *Æther*, and the *Stars* themſelves, ſo as to leave no neceſſity for a *Vacuum*.

Whether there be any Vacuum?

17. The preſent *Queſtion* alſo concerning a *Vacuum in the interſtellar Spaces*, has a dependance upon that other belonging to the Principles of *Natural Philoſophy*; viz. Whether there be any *Vacuum?* But this Queſtion muſt be put with ſome diſtinction: For 'tis one thing to deny a *ſimple*, and another to deny a *collective Vacuity*; ſince the reaſons producible for the exiſtence of an *interſperſed Vacuity* (admitting the Relaxation or Rarification of Bodies) are ſtronger than thoſe which make for a *collective Vacuum*, in the vaſter Spaces. And this diſtinction was not only perceived by *Hero*, a ſubtile mechanical Philoſopher; but alſo by *Leucippus* and *Democritus*, the Introducers of a *Vacuum*, which *Ariſtotle* combats with certain Subtilties and turns of Wit. But the two above-mention'd acute and famous Philoſophers allow an *interſpers'd Vacuity*; ſo as to deſtroy the Notion of a *collective one:* For, in the Opinion of *Democritus*, Vacuity is ſo circumſcribed, that Bodies cannot be drawn aſunder, any more than they can be compell'd together, beyond certain Bounds. And tho this is no where expreſly aſſerted in thoſe *Writings* we have remaining of *Democritus*[b]; yet he ſeems to ſay as much, by *making Bodies infinite, as well as Space:* Which he does for this Reaſon, that Bodies otherwiſe, would never hold together; *viz.* if Space were infinite, and Bodies finite: And, therefore, if Matter be equally infinite with Space, *Vacuity* is neceſſarily bound up within certain Limits[c]: Which ſeems to be his true Opinion, fairly explain'd; ſo as to ſet certain Boundaries to the expanſion of Bodies, by the *Vacuity* wherewith they are coupled; without allowing any pure or *ſimple Vacuity*, uncontained in Matter[d].

18. But

globular Bodies, moving with equal Velocity, in *Air*, *Water*, and *Quickſilver*, are as the Denſities of the Fluids; (2.) that tho the *Water*, *Air*, or *Quickſilver*, were rarified by an infinite Subdiviſion of their Parts, ſo as to become Mediums infinitely fluid; they would ſtill reſiſt, after the ſame manner as before: Becauſe this Reſiſtance proceeds from the inactivity of Matter; which is eſſential to Bodies, and conſtantly proportion'd to their quantity of Matter. For, tho to divide the parts of a Fluid, may leſſen that Reſiſtance which proceeds from the Friction and Tenacity of the Parts; yet the quantity of Matter is not diminiſhed by ſuch Diviſion: And whilſt the quantity of Matter remains the ſame, ſo will its inactivity, to which the Reſiſtance here underſtood, is ever proportional. (3.) That, therefore, to diminiſh this Reſiſtance, the quantity of Matter muſt be diminiſhed in the Spaces thro which the Bodies move: Conſequently, the *interſtellar Regions*, thro which the Globes of the Planets and Comets conſtantly revolve in all directions, with great freedom, are not filled with any *corporeal Fluid*; excepting only for ſome highly rarified Vapours, and the *Rays of Light* tranſmitted thro thoſe Regions. See *Princip.* Lib. II. *Schol. Gen.* and Lib. III. Prop. XL, &c.

[a] See hereafter, SECT. II. 30.

[b] See *Morhof. Polyhiſt.* Tom. II. Lib. II. Cap. VII. p. 179, &c.

[c] This is attempting to account for Coheſion in Bodies; which put into a *Vacuum*, ſhould fall to pieces, if the Poſition were true.

[d] Sir *Iſaac Newton* proves, that all Spaces are not equally fill'd; becauſe, otherwiſe, the *ſpecifick Gravity* of the Fluid that poſſeſſes the Region of the Air would be equal to that

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18. But if there be no *Vacuum*, after the manner *of a Solution of Continuity*; yet ſo great a diverſity in the Parts and Regions of the *Syſtem of Bodies*, that they ſeem to be, as it were, of different Nations, and Countries; there hence ariſes a ſecond *Queſtion*, with regard to the connexion of the *Syſtem*; viz. *Whether pure Æther be one uniform or continued Fluid; or whether it conſiſts of many contiguous Parts?* By a *contiguous Body* we here mean a Body that lies upon another, without mixing with it. Nor do we underſtand ſuch a *hard Flooring* as the common Aſtronomers have feign'd; but ſuch an one as may admit of flowing; as when Water floats on Quickſilver, Oil on Water, and Air on Oil. For no doubt, but in that immenſe tract of Æther, there are very conſiderable differences in point of Rarity and Denſity; beſides many others[e]: But this may be the Caſe, whether the parts of the Æther are *continuous* or *contiguous*. For 'tis manifeſt, that even in the *Sea* itſelf, the Water on the top is not of the ſame Taſte and Conſiſtence with that at the bottom[f]. And in the *Atmoſphere* there is a great difference betwixt the *Air* adjacent to the Earth, and that high above it; and yet there is one entire and conſtant Flow in the Atmoſphere[g]. The *Queſtion* therefore comes to this; viz. *Whether the differences in the tract of Æther inſinuate themſelves gradually, and by a continued Flux; or whether they are conſtituted, and diſtributed, at certain conſiderable diſtances, or limits, where Bodies meet, that will not mix*; as here below the Air floats on Water[h]. And to take the thing ſimply, that whole, pure, and limpid Body, wherein the Globes of the *Earth* and *Planets* float as in an immenſe Ocean, which in its dimenſion, and the ſpace it poſſeſſes, almoſt infinitely exceeds the dimenſions of thoſe Globes, ſeems to be *one undivided* and *perfectly united thing*[i].

Whether the Æther be continuous or contiguous?

The Procedure of Nature in different degrees of Change from one Body to another.

19. But whoever carefully obſerves *Nature*, will find her Method is to proceed by degrees, for certain ſpaces; and then, of a ſudden, to advance by ſtarts; and to uſe this procedure alternately: Otherwiſe, to con-

that of *Quickſilver*, *Gold*, or any other the denſeſt Bodies; which, therefore, could not deſcend in Air: For no Bodies can deſcend in ſuch Fluids as are not ſpecifically lighter than the Bodies. See *Princip.* Lib. III. Prop. VI. And, as the ſame Philoſopher ſhews, there is no *abſolute Vacuity* in the *interſtellar Regions*, on account of ſome ſubtile and highly rarified Vapour, the Rays of Light, and ſome ſmall Reſiſtance, which the ſeveral celeſtial Bodies ſuſtain in their Motions, his Doctrine on this Head ſeems ſomewhat agreeable to that of *Democritus*, as here explained; eſpecially if a *ſubtile elaſtic Fluid*, or *Spirit*, be ſuppoſed the *Cauſe of Gravity, or Coheſion, in Bodies.* See *Princip.* Lib. III. *Schol. Gen. ad finem.* See alſo the *Queries* at the end of the ſame Author's *Opticks.*

[e] Perhaps the finer parts of the Atmoſpheres of the Planets and Comets may go off into the Region of *Æther*, if there be any ſuch Fluid, as they paſs along it; and thus, by degrees, impregnate that immenſe Ocean, and render it a kind of compound Tincture, as the Earth's *Atmoſphere* more manifeſtly is. See Sir *Iſaac Newton*'s Conjecture as to the Uſe of the Comets; *Princip.* Lib. III. Prop. XLI. pag. 472, 473. Mr. *Boyle's Memoirs for a General Hiſtory of the Air.* Dr. *Hook's Micrographia*, &c.

[f] See Mr. *Boyle on the Saltneſs of the Sea*, &c.

[g] See Mr. *Boyle's Memoirs for a General Hiſtory of the Air.*

[h] See the Piece laſt cited.

[i] Upon what experimental Foundation does this Notion of Æther ſtand; as of an actual Fluid exiſting in the interſtellar Regions?

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ſider it cloſely, there could be no *Fabric of things*; no organical Conformation, if ſhe conſtantly proceeded by *inſenſible degrees*. This gradual Procedure, therefore, may take place in the intermundane Spaces, and not in the World itſelf; the Structure whereof requires very different things to be ſeparated, or ſhut up, from, and yet approach one another. Hence, the *Air* immediately touches, and ſucceeds to, very different Bodies from itſelf; *viz.* the Earth and Water; without going in a ſcale, firſt from *Earth* to *Mud*, and then from *Mud* to *Water*, from *Water to Vapour*, or Clouds, and, laſtly, to *Air*; but Nature here jumps at once to *Air*, without any intermediate degree[k].

The Heavens divided into three capital Parts.

20. But the moſt obſervable and fundamental Diviſion of all, in the Air and *Æther*, ſeems derivable from the *Nature*, which is more or leſs ſuſceptible of a *ſtellar Nature*. Whence there ſeem to be three very remarkable kinds of *Regions* between the *Globe of the Earth*, and the utmoſt extent of the *Heavens*; viz. (1.) the *Tract of Air*; (2.) the *Tract of the planetary Heaven*[l]; and (3.) the *Tract of the ſtarry Heaven*. Now the *ſtellar Nature* does not exiſt in the *lower Tract*; but in the *middle one* it begins; and there comes together into a few particular *Globes*; and in the *upper* diffuſes itſelf into a very large number of *Globes*; ſo that its top may ſeem to reach the entire *empyrean Heaven*.

The gradual *and* ſtarting Procedure *uſed by turns in the Heavens.*

21. It muſt, however, be remember'd, according to what was juſt now mentioned, that Nature here uſes this *gradual* and *ſtarting Procedure* by turns, ſo as to make the Confines of the *firſt Region* communicate with the *ſecond*; and thoſe of the *ſecond* with the *third*: For in the *higher Air*, after it begins to be purged of the *Earth's Effluvia*; and to be more rarified by the Effluvia of the celeſtial Bodies; it tries and endeavours to become Flame; as in the caſe of the *lower Comets*[m], which ſeem of a *middle nature*; between the conſiſtent one of the Stars, and a more periſhable one. Again, the Heavens about the Sun may ſeem to grow ſtarry, and begin to paſs into the nature of the *ſtellate Heaven*: For the *Spots* which have been accurately obſerved in the Sun, may poſſibly be certain *Rudiments of a ſtarry Matter*[n]. But, in the Heavens, about *Jupiter*, the *Stars* appear in their perfection; tho, by reaſon of their ſmallneſs or diſtance, they are inviſible to us, without the aſſiſtance of Teleſcopes[o]. And again, at the greateſt height of the *ſtarry Heaven*, the *ſtellar Nature* ſeems to be more continu'd, and diffus'd; from thoſe numberleſs twinklings or radiations of the Æther, among the *fixed Stars* that are number'd[p].

22. There

[k] This appears a capital Obſervation for interpreting the Works of Nature.

[l] Now commonly called the *Solar Syſtem*.

[m] All the *Comets* are ſhewn by Sir *Iſaac Newton* to be higher in the Syſtem than the Moon; and to revolve in long *Ellipſes* about the *Sun*. See *Princip.* Lib. III. Prop. XLI.

[n] See the ſeveral Obſervations upon theſe Spots of the Sun in the *Philoſophical Tranſactions*, *French Memoirs*, &c. or a Summary of the whole in *Wolf. Element. Aſtronom.* pag. 459, 460, &c.

[o] Are any *fixed Stars* certainly found ſo low in the *Syſtem* as *Jupiter*?

[p] Theſe Twinklings are thought, by Sir *Iſaac Newton*, to proceed from the Refraction of our Eyes, and the tremulous Motion of the Air. See *Princip.* Lib. III. pag. 467. See alſo hereafter, SECT. II.

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22. There is a *fifth* kind of *Queſtion* regarding *the ſituation of the parts of the Syſtem, or the Order of the Heavens.* And whether there be a *Syſtem*, with the *Sun* for its Centre, or no *Syſtem* at all, ſo as to leave the celeſtial Bodies looſe and ſtraggling; or whether *Aſtronomers* ſhall hereafter diſcover any *new Syſtem*; the Enquiry will ſtill remain, *what Planet is neareſt to, or fartheſt from, another*; and, in like manner, what Planet has a greater, and what a leſs *Elongation* from the *Earth* or *Sun.* *Queſtion (5.) What is the Order of the Heavens?*

23. If the *Syſtem* of the Ancients be admitted; there appears no reaſon for inſiſting ſtrenuouſly upon the *new Enquiry*, about the four ſuperior Regions; *viz.* that of the *fixed Stars*, and thoſe of *Saturn*, *Jupiter*, and *Mars:* As their Order and Poſition have been agreed to by all Ages, without contradiction from any *Phænomenon.* Their reſpective Motions are alſo ſettled, and cauſe no Error in Calculation[q]. But the Ancients, even upon their own *Syſtem*, had doubts about the *Sun*, *Venus*, *Mercury*, and the *Moon*; and the Moderns likewiſe have queſtion'd, which was the higher Planet, *Venus* or *Mercury.* That *Venus* ſhould be the higher is argued, becauſe ſhe moves ſomewhat ſlower; and that *Mercury* ſhould be the higher, becauſe he ſeems more ty'd to the *Sun*; whence 'tis conceived, he muſt be placed the neareſt to him. But for the *Moon*, ſhe was always placed neareſt the Earth; tho there is ſome diſpute about her approach to the Sun[r]. *Upon the Syſtem of the Ancients.*

24. There is alſo another kind of *Queſtion* regarding the *Conſtitution of the Syſtem:* For example, *whether one Planet moves ſometimes over and ſometimes under another, by turns:* Which ſeems demonſtrated in the caſe of *Venus*, from diligent Obſervations; whereby ſhe has been found ſometimes above, and ſometimes below the *Sun.* And 'tis proper to enquire whether the *Apogeè* of a lower Planet may not reach the *Perigée* of a higher; and thus produce an Interſection of Orbits[s]. *Whether the Planes of the Planets do not interſect each other?*

25. The laſt *Queſtion*, as to the *ſituation of the parts of the Syſtem* is this. *Are there ſeveral different Centres in the Syſtem; and ſeparate Revolutions round them?* Eſpecially, ſince not only the *Earth* has been made the *Centre* of the firſt Movement; and the *Sun* the *Centre* of the ſecond; but alſo *Jupiter* is made the Centre of thoſe leſſer *Planets*, or *Satellites*, lately diſcovered by *Galilæo*[t].

[q] But theſe Particulars are ſettled to greater Exactneſs by later Obſervations. See Sir *Iſaac Newton*, Dr. *Gregory*, *Wolfius*, &c.

[r] See theſe Particulars adjuſted in Sir *Iſaac Newton*'s *Principia*, Part III. *De Syſtemate Mundi*, and from thence by the later *Writers of Aſtronomy*; but particularly *Wolfius* in his *Elementa Aſtronomiæ.*

[s] How the *Motions of the Planets* are perform'd round the *Sun*, without claſhing or interfering with each other, ſee exhibited in a ſingle *Theorem*, by *Wolfius*, in his *Elementa Aſtronomiæ*, pag. 505, 506.

[t] And which Sir *Iſaac Newton* demonſtrates, revolve about the *Centre of Jupiter*, with a force reciprocally as the Squares of their Diſtances from it. See *Princip.* Lib. III. Prop. I. And the beſt Solutions of all the preceding Queſtions ſeem derivable from the ſame admirable Work; but thoſe who have not a ſufficient ſtock of Mathematicks to underſtand that Piece, may to good advantage conſult *Chriſt. Wolfii Elementa Aſtronomiæ*; where all is explain'd in a much more familiar and entertaining; yet *Geometrical Manner.*

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Recapitulation.

26. And thus there are five capital *Queſtions* which ſhould be ſifted with regard to the *Syſtem itſelf*; viz. (1.) *Whether there be a Syſtem?* (2.) *What is its Centre?* (3.) *What its Dimenſions?* (4.) *What its Connexion?* And, (5.) *What its Order of Parts?* But for the external parts of the Heavens, and the *empyrean Heaven*, we raiſe no *Queſtions* about them: For of theſe things there is no *Hiſtory* nor *Phænomena* extant; and therefore, what is to be known of them, muſt be had by *Conſecution*, not by *Induction*[t]. This Enquiry, therefore, muſt wait its proper time; and expect its SUITABLE METHOD. But for the *immaterial Heavens*, we had better truſt them wholly to *Religion:* For what the *Platoniſts* of old; and *Patricius* of late (to ſhew themſelves Divines in Philoſophy) have ſaid on this Head, is mix'd with manifeſt Superſtition, Arrogance, and Phrenſy, and, like the *Icons* and *Æons*, or *Dreams* and *Fictions* of *Valentinus*, bold and fruitleſs; ſo that we reject it all, as trifling, vain, and prepoſterous: For to canonize Folly, as in the *Apotheoſis* of *Claudius* into a *Muſhroom-God*, is intolerable: And to venerate Vanities is extreme Abomination; and the bane of the *Underſtanding*.

SECT. II.

PHYSICAL QUESTIONS *concerning the Subſtance of the* CELESTIAL BODIES.

The Neceſſity for uniting Phyſicks *and* Aſtronomy.

1. WE come next to the *Queſtions* regarding the *Subſtance of the heavenly Bodies*; into which, and the *Cauſes of their Motions*, 'tis the principal Office of *Philoſophy*, to enquire. But *Aſtronomy* alſo undertakes to enquire into their Motions, with the Properties thereof; and both *Philoſophy* and *Aſtronomy* into their *Influence* and *Powers*. There is, however, a Difference to be made betwixt *Aſtronomy* and *Philoſophy: Aſtronomy* ſhould be conceived to lay down ſuch *Hypotheſes* as beſt ſerve the Purpoſes of a ready and expeditious *Calculation*; but *Philoſophy* ſuch as nearly approach the Truth and Reality of *Nature*. Again, the *Hypotheſes* of *Aſtronomy* may be ſubſervient to their own Convenience, but ſhould in no wiſe prejudice the *Truth of things*; and the *Determinations of Philoſophy* ſhould here be perfectly explicable upon the *Phænomena of Aſtronomy*.

[t] What kind of Intimation is this? The Method of enquiring by Induction is known, and fully explained in the Author's *Novum Organum:* But what is the *Method of Diſcovery by Conſecution?* Perhaps, 'tis meant, that when the Buſineſs of *inductive Enquiry* ſhall be carried its due length, in *Aſtronomy*; and the immenſe Regions of the fixed Stars be as well underſtood as the *Solar Syſtem*, at preſent; the Notion of an *empyrean Heaven* may, by *Conſecution*, appear, to future Generations, a *Vanity*, or a *Fiction*; or elſe all that ſuppoſed Region be found full of *Worlds* and *Syſtems*, like the ſolar. But this may be launching too far.

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nomy. But, at preſent, the direct contrary is the caſe; for the *Fictions of Aſtronomy* are introduced into, and have corrupted *Philoſophy*; and the Speculations of *Philoſophers* about the *celeſtial Bodies* pleaſe none but themſelves; and in a manner run off from *Aſtronomy*; as regarding only the *Heavens in general*, without at all reaching to the particular *Phænomena* and their *Cauſes*. Therefore, as both theſe *Sciences*, in their preſent State, are but light and tottering things; their Foundations ſhould, by all means, be ſtronger fix'd; and in ſuch a manner, as if the two, which, by reaſon of the School Uſes made of them, and the Narrowneſs of Mens Comprehenſions, have, for ſo many Ages, been *ſeparated* and *disjoined*, were but one and the ſame thing, to be wrought up together into a ſingle Corps of *Science*, under the Title of *Philoſophical Aſtronomy*[v].

Queſtion (1.)

2. Let the firſt QUESTION, therefore, be this. *Is the Subſtance of the celeſtial Bodies of a different nature from that of the terreſtrial?* For the raſh and diſputatious Temper of *Ariſtotle*, has given us an *imaginary Heaven*, made of the *Quinta Eſſentia*, that is not ſubject to *Alteration*, or even to *Heat*. But to drop, for the preſent, ſpeaking of the *four Elements*, which this *Quinta Eſſentia* ſuppoſes; it was certainly a very confident Attempt, entirely to cut off all relation betwixt the *elementary* and *celeſtial Bodies*; whilſt two of the Elements, *viz. Air* and *Fire*, have ſo great an Agreement with *Æther*, and the *Stars*: But it was the practice of that Philoſopher to abuſe his own *Genius*, make himſelf Work, and affect Obſcurities[w]. There is, however, no doubt, that the Regions both below and above the *Moon*, together with the Bodies they contain, differ from one another in many and great reſpects: But 'tis no leſs certain, that the Bodies of both theſe Regions have numerous Properties, Tendencies, and Motions, in common; ſo that we ſhould rather diſtinguiſh betwixt, than rend them aſunder: as being, at the bottom, of the ſame nature[x].

Whether the celeſtial Bodies are of the ſame Nature with the terreſtrial?

That the terreſtrial and celeſtial Bodies may differ in Properties, and not in Eſſence.

3. As to that Opinion of their *Heterogeniety*, which makes the *celeſtial Bodies eternal*, and the *terreſtrial periſhable*; it ſeems fallacious on both ſides: For the *Heavens* have not that *Conſtancy*, nor the *Earth* that *Mutability* which is coined by the Favourers of this Notion. Whoever would form a true judgment of the *Earth*, can only do it from ſuch parts thereof as have been ſeen; but all the terreſtrial Bodies hitherto obſerved by Men, have ſcarcely been dug, or thrown up, from a greater depth than that of three Miles from the *Surface*; which is nothing in compariſon of the *Earth's* Semidiameter, and the whole Contents of the Globe: And therefore the internal parts of the Earth may, for any thing that has hitherto appeared, be as *durable* as the Heavens[y].

That the internal parts of the Earth may be as immutable as the Heavens.

4. And if the *Earth* did ſuffer Changes at greater depths; the Conſequences thereof muſt neceſſarily produce greater Accidents, than appear on

And its Changes reach not below its more ſuperficial Parts.

[v] Which the preſent Age has ſeen ſucceſsfully promoted by Sir *Iſaac Newton*.

[w] See his full Character in the following Piece, SUPPLEMENT X.

[x] Is this Poſition capable of a ſtrict *Inductive Proof*? Or can any nearer Advances be made to the Diſcovery, than by Sir *Iſaac Newton*'s third *Regula Philoſophandi*? See above, Sect. I. 2.

[y] See Mr. *Boyle*, of the *Subterraneal Regions*.

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on the Surface: But in all the *Changes* we perceive towards the ſuperficial parts, there is almoſt conſtantly ſome other manifeſt *Cauſe* of them derivable from above; as difference of the Seaſons, Rains, Droughts, Heats, *&c.* ſo that the Earth of itſelf, and its own proper Force, ſeems to afford no *Cauſe* of any conſiderable Change. And allowing, what is probable, that not only the *celeſtial Bodies*, but alſo the *Earth*, acts upon the Regions of the *Air*; either by breathing out *Cold*, diſcharging *Winds*, or the like; yet all this Variety may happen in thoſe Regions of the Earth which lie near the Surface; and where no one can doubt but there are numerous *Changes* and Revolutions.

That Earthquakes, &c. happen only near the Surface.

5. But of all the Phænomena of the *Earth*; Earthquakes, and Accidents of the like kind, muſt be allowed to penetrate by far the deepeſt; as the Eruption of Water, the Eructation of Fire and Flames, Chaſms, and falling in of the Earth, *&c.* and yet theſe do not happen at any great Depth; as moſt of them uſually affect but ſome little ſpace on the ſurface of the *Earth*, without ſpreading far: For the wider an *Earthquake*, or the like, ſhould ſpread upon the Earth's Surface, the deeper its Origin muſt be conceived, and *vice verſa*[z].

Earthquakes in the Earth ſet againſt Comets in the Heavens.

6. 'Tis true, there ſometimes happen ſuch *Earthquakes*, as ſhake very large and ſpacious *Countries*; tho theſe are not frequent, but extraordinary Caſes; and may therefore be, pertinently, compared to the *Comets*, which alſo appear but ſeldom: For the buſineſs here is not to maintain the *Immutability of the Earth*; but only to ſhew there is no great difference betwixt the *Heavens* and the *Earth* in point of *Conſtancy* and *Change*.

That poſſibly the internal parts of the Earth ſuffer no Loſs, and want no Repair.

7. And further; that the internal parts of the *Earth* are not more ſubject to Corruption than the Heavens themſelves, may be argued from hence; that things uſually decay and periſh, where they may be recruited and renewed. For as *Showers* and other falling *Meteors*, which renew the face of the Earth, can, by no means, penetrate to its internal parts; which, nevertheleſs, maintain their bulk, and quantities; it ſhould ſeem to follow, that nothing is there loſt; as there is nothing at hand to repair any loſs[a].

8. Laſtly,

[z] This, tho probable, may require to be better confirm'd; becauſe the Force that was great at firſt, and exerted on the central Parts, might be ſuſpected to diminiſh near the Surface; ſo as not there to produce any very conſiderable Effect.

[a] This Conjecture may receive ſome Light from the Converſe thereof, which is intimated by Sir *Iſaac Newton* in his *Principia*, upon better grounds, perhaps, than he there expreſſes; *viz.* that as the Sea is abſolutely neceſſary to the Conſtitution of the Earth, in order to afford a ſufficient quantity of Vapour, which is raiſed by the Sun; and being either condenſed into Clouds, falls back again in Rain, to water and ſupply the Earth, for the production of Vegetables; or elſe being condenſed upon the cold tops of Mountains, runs down into Springs and Rivers; ſo, *Comets* ſeem neceſſary for ſupplying the *Seas*, and proper *Moiſture* in the *Planets*; that what Liquors are there conſumed in *Vegetation* and *Putrefaction*, and converted into *dry Earth*, may be ſeaſonably recruited and made good, by the *Exhalations* and *Vapours* of the *Comets*. For all Vegetables wholly receive their Growth from Liquids; and afterwards turn, by Putrefaction, in great meaſure, to *dry Earth*. Whence the bulk of *dry Earth* is perpetually upon the increaſe, and Liquids, unleſs otherwiſe ſupplied, perpetually upon the decreaſe, ſo as to fail at laſt. *Princip.* Lib. III. pag. 473.

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8. Laſtly, the *Mutability* obſerved in the more *external parts of the Earth*, ſeems only *accidental*[b]: For the thin outſide *Cruſt*, which appears to reach but a few Miles downwards, and to contain the two wonderful *Laboratories* of *Plants* and *Minerals*, would receive little Variety, much leſs produce ſuch beautiful and elaborate Works, without feeling the Influences and perpetual Animation of the *celeſtial Bodies*. To imagine that the heat and active powers of the *Sun*, and other celeſtial Bodies, may ſtrike quite thro the entire Body of the terreſtrial Globe, muſt be a ſtrange degree of Superſtition and Enthuſiaſm; whilſt it plainly appears how ſmall an Object is ſufficient to check and reſtrain them.

The Mutability of the external Earth accidental.

9. No ſure Argument for the *immutability of the Heavens*, can be drawn from hence; that the Effects thereof are not viſible: for the Sight is fruſtrated as well by Diſtance, exceſs, or defect of *Light*, as the ſubtilty or minuteneſs of the Object: So an Eye placed in the *Moon* could not diſcover the changes which happen here upon the *Earth's Surface*; ſuch as *Inundations*, *Earthquakes*, and the like; for theſe are but as Atoms at ſo great a diſtance. Nor is it ſafe, becauſe the *interſtellar Heaven* appears tranſparent, and the *fixed Stars*, on clear Nights, appear the ſame, both in Number and Complexion, to pronounce from thence, that the entire body of the Æther is clear, pure, and unchangeable: For the *Air* receives numberleſs varieties of *Heat*, *Cold*, *Odours*, and *Mixtures*, of all kinds, in ſubtile Vapours, and Effluvia; and yet appears tranſparent. So likewiſe the clear face of the Heavens is no Proof of their *Purity*, *Homogeneity*, and *Incorruptibility*. For if thoſe huge maſſes of *Clouds*, which ſometimes overſpread the *Heavens*, and, by reaſon of their nearneſs to us, hide the Sun and Stars from our ſight, were to float in the higher parts of the *Heavens*; they would not at all fully or obſcure the clearneſs thereof: As themſelves could neither be ſeen, on account of their diſtance, nor darken the Stars, on account of the ſmallneſs of their Body, with regard to the Body of the Stars ſo near them[c]. Even the Body of the *Moon* does not alter the face of the *Heavens*, except on that half which receives the *Sun's* Light; ſo that, were it not for that Light, even ſuch a vaſt Body as the *Moon* would be perfectly hid from us.

The Arguments for the Immutability of the Heavens not concluſive; as no Change is viſible.

10. On the other hand, it plainly appears from thoſe maſſes of Bodies, which by their bulk and ſize ſupply their want of nearneſs; and which, by means of their luminous Matter, briſkly ſtrike the Eye; that there are ſtrange and extraordinary *Changes in the Heavens*. Thus the *higher Comets*, ſeen in the form of *Stars*, without their Tails, are not only by the Doctrine of the *Parallax*, demonſtrated to be above the Moon[d], but have alſo been found to preſerve their own Figures, Stations, and Conſtancy, for ſome time, like the fixed Stars; without wandering in the manner of Planets. And ſuch *Comets* have more than once appeared in our Time: Firſt

Viſible Changes found in the Heavens.

[b] That is owing to Cauſes from without.

[c] Compare this with Sir *Iſaac Newton's* Doctrine of the *Tails* of Comets. *Princip.* Lib. III. pag. 466, 467, 468, *&c.*

[d] See *Newton. Princip.* Lib. III. Lem. IV.

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First in *Caſſiopeia*, and again in *Ophiucus* [e]. That this Conſtancy of the *Comets* ſhould proceed from their waiting upon ſome certain Star, which was the Notion of *Ariſtotle*, has been long ſince exploded; with a reflexion upon the Procedure of that Philoſopher, who durſt venture to raiſe *Hypotheſes* upon ſuch ſuperficial Conſiderations, and tie the Comets to ſingle Stars; and the *Milky Way* to *Conſtellations*.

The Appearance of new Stars.

11. Nor does this alteration in the *celeſtial Regions* hold only of thoſe *Stars* which may ſeem of a periſhable nature; but alſo of thoſe that are *fix'd* and *conſtant*: For the Ancients, in the Caſe of the *new Star* of *Hipparchus*, make mention of an *Appearance*, but none of a *Diſappearance*: And a *new Star* lately began to appear in the Breaſt of *Cygnus*, which has now continued for the ſpace of twelve years; a term much greater than Men commonly allow to the *Comets*: And this without any diminution or tendency to a Diſappearance [f].

Changes in the Sun.

12. Nor is it abſolutely true, that the ancient Stars remain perfectly the ſame, and unchangeable; whilſt only thoſe of late date are ſubject to alteration: For, not to mention the *Arcadian Fables* about the firſt appearance of the *Moon*; there are in *Hiſtory*, and the faithful *Records* of things, certain examples to our purpoſe. The *Sun* has three ſeveral times changed his Face, for many days together; whilſt the Air remained clear and ſerene, without any *Eclipſe*, or interpoſition of *Clouds*. At one of theſe times his Light was little; and at the two others browniſh. This happen'd in the year 790, for ſeventeen days together; again, in the time of *Juſtinian*, for half a year; and, after the Death of *Julius Cæſar*, for ſeveral days ſucceſſively. *Virgil* bears a remarkable Teſtimony of the Darkneſs that happen'd upon the Death of *Julius Cæſar* [g].

Alterations in Venus.

13. The Account of *Varro*, a Man extremely well vers'd in Antiquity, found in St. *Auſtin*, concerning the Planet *Venus*, might ſeem incredible; had not the like thing happen'd again in the year 1578: For *Varro* ſays, that in the time of King *Ogyges*, *Venus* changed both her *Colour*, her *Magnitude*, and her *Figure*: But in our own time, there was, for a whole year together, a moſt remarkable alteration in the ſame *Planet*; when ſhe appear'd of an unuſual Magnitude, and Splendor; exceeded even *Mars* in redneſs; and frequently changed her figure [h]. And that ancient Star which *Ariſtotle* declares himſelf to have ſeen in *Coxa caniculæ*, bearded ſomewhat like a *Comet*; and vibrating its Beard, eſpecially upon a tranſient view [i]; now ſeems changed, and to have loſt its Beard: For it no where appears at preſent. We may add, that numerous alterations in the celeſtial Bodies, but

Diſappearance of Stars.

[e] See the Author laſt mention'd. *Princip.* Lib. III. pag. 455, &c. and *Wolf. Elem. Aſtron.* pag. 594.

[f] See *Wolfii Elementa Aſtronomiæ*, pag. 594.

[g] Ille *etiam extincto miſeratus Cæſare Romam,*
Cum caput obſcura *nitidum* ferrugine *texit.*

[h] See *Wolfii Elementa Aſtronomiæ*, p. 473, 474.

[i] Compare this with Dr. *Hook*'s Diſcourſe of *Comets*, Sir *Iſaac Newton*'s *Princip.* Lib. III. p. 467. and with *Wolfius*'s Doctrine of Comets. *Element. Aſtronom.* p. 595, &c.

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but especially in the *smaller Stars*, may easily be lost to us; or, thro neglect, and want of Curiosity, escape our Observation[k].

14. If any one should attribute these apparent *Changes* to the interposition of Vapours, and the disposition of the Medium; we answer, That such *Changes* as are constantly, equally, and for a long time together, found in the Body of a *Star*, and revolve along with it, must necessarily be either in the *Star* itself, or in the *Æther* adjacent thereto; and not in the lower *Region of the Air*. And 'tis a Confirmation hereof, that such Changes happen but seldom, and at long periods; whereas the Changes that happen in the Air, from the interposition of Vapours, are frequent. *These Changes not justly assigned to the Air.*

15. Again, if any one shall judge from the *Order of the Heavens*, and the Equability of their Motion, that they are *immutable*; and take the exactness of their Periods and Revolutions, as a certain sign of their Constancy, because such a *constancy of Motion* may seem unsuitable to a corruptible Substance; he should consider a little more attentively, that these regular Returns and fixed Periods are also found in some things upon the Earth; particularly in the *ebbing* and *flowing of the Sea:* And that the smaller Differences which there may be in the *celestial Bodies*, their *Periods* and *Revolutions*, escape our Sight and Calculation[l]. *Order and exact Motion, no Argument of Immutability in the Heavens.*

16. No more can the *circular Motion* of the *Heavens*, be brought as an Argument of their Immutability; as if because a *circular Motion has no End, it should be adapted to an ever durable Substance:* For even the lower *Comets* descend below the Moon; and that from a Force of their own; unless any one had rather give into that idle Fiction of *Aristotle*, of their being tied to a Star. And if Men would argue for the *Eternity* of the celestial Bodies, from their circular Motion; the Argument should be applied to the whole Expanse of the Heavens, and not to their Parts: For the *Air*, the *Sea*, and the *Earth*, are eternal in their entire Masses; but perishable in their Parts. On the contrary; supposing the Rotation of the Heavens, their Eternity cannot be thence collected; for their Motion is not perfectly circular, or such as restores itself exactly, in a Circle; but has its Declinations, Curvatures, and Spirals[m]. *Circular Motion no Argument of Eternity in the Heavens.*

17. Again, if any one should retort our own Argument, which asserts the *Changes* happening in the Earth to be accidental, or proceeding from above; and maintain the Case to be otherwise in the *Heavens*; which can by no means suffer, in like manner, from the *Earth*; whose Influences must all fall short, without reaching to the *celestial Bodies*; so that, probably, the *Heavens*, being exempted from all hostile Violence, are capable of Eternity; as not liable to Injury, or disturbed from any opposite Nature: We acknowledge the Force of the Objection; for we pay no deference to *Whether the Earth be capable of affecting the Heavens.*

[k] For an Account of such Stars, see the *Philosophical Transactions*, and *Wolfius's Elementa Astronomiæ*, pag. 593, 594, 595.

[l] The late Improvements made in *Telescopes*, and other *Optical Instruments*, have enabled Astronomers to discover such smaller Objects and Variations in the Heavens, as without such Improvements, must have been still unknown. See *Wolfii Elem. Astronom. passim.*

[m] But in the Hypothesis of the Earth's Motion, things appear much more simple; tho this, as was before observed, is no Proof of the Truth of that Hypothesis.

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the Opinion of *Thales*, who would have the *celeſtial Fires fed and maintain'd by the Vapours ariſing from the Earth and Ocean:* For theſe Vapours fall back nearly in the ſame quantity they aſcended; are abſolutely inſufficient for recruiting both the Earth and the *celeſtial Bodies*; and, indeed, can, by no means, riſe ſo high. But, however the material *Effluvia* of the *Earth* may fall ſhort of riſing to the Heavens; yet, if the *Earth* ſhould, according to the Opinion of *Parmenides*, and *Teleſius*, be the *primary cold Body of Nature*; 'tis not eaſy to ſay, with certainty, to what Height this unfriendly and rival *Virtue* to the *Heavens*, may inſinuate itſelf, *gradually*, and by *ſucceſſion*; eſpecially as *ſubtile Bodies* imbibe, and long preſerve the nature and impreſſion of *Cold* and *Heat*. But granting the *Heavens* not to be affected by the *Earth*; yet the *celeſtial Bodies* may ſuffer and be changed by one another, as the *Sun* by the *fixed Stars*; the *fixed Stars* by the *Sun*; the *Planets* by *both*; and all the *Stars* by the *Æther* they float in, eſpecially on their Surfaces[n].

That the celeſtial Bodies may ſuffer from one another.

18. The *Notion* of the *Eternity of the Heavens* ſeems to receive much countenance from that Machinery and Architecture which *Aſtronomers* have buſily introduced. They have been extremely careful that the *celeſtial Bodies* ſhould be ſubject to nothing more than a *ſimple Rotation*; and, in all other reſpects, remain quiet and undiſturbed. Hence they have, as it were, nail'd down each Star to its Orbit; and for their Declinations, Retrogradations, *&c.* they make ſo many perfect Rings, of a proper thickneſs, and turn and poliſh both their concave and convex ſides ſo exquiſitely, as to leave no Roughneſs thereon; but adapt and fit them to one another, in ſuch a manner, as to make them ſlide ſmoothly and equably, without ſtickage. And this kind of Grooving and Machinery is an ingenious contrivance for Eternity; as it removes all Violence and Diſorder, which are the inſeparable Forerunners of Corruption and Deſtruction. For, doubtleſs, if ſuch vaſt Bodies as the *Globes* of the *Stars*, were to cut thro the Æther, and not remain continually in the ſame parts thereof, but ſail thro various Portions, and very different Tracks of it; as they ſometimes mount upward, ſometimes deſcend downward, towards the Earth, ſometimes tend to the South, and ſometimes to the North; there muſt be great danger of numerous Impreſſions, Shocks, Fluctuations, and mutual Commotions in the Heavens: Upon which would follow ſuch Condenſations and Rarifactions of the celeſtial Bodies, as might pave the way for new Generations and Alterations[o]. And, as it appears from phyſical Reaſons, and alſo from the Phænomena themſelves, that this latter is plainly the Caſe

The fictitious Machinery of the Aſtronomers to prevent Diſorders in the Heavens.

[n] Sir *Iſaac Newton* ſhews, that the fixed Stars, on account of their immenſe Diſtance, can have very little Force in diſturbing the Planetary Syſtem by their *Gravity*; which is alſo balanc'd or deſtroy'd by their mutual Action every way upon one another: But may not ſome ſmall Effect be wrought by the Light of the fixed Stars upon the Planets? See *Newton. Princip.* Lib. III. Prop. XIV. and Mr. *Boyle's Apology for Aſtrology*, in his *Memoirs for a General Hiſtory of the Air.*

[o] This Deſcription ſeems exactly to ſuit the *Comets*, which move in all Directions thro the Planetary Regions; and may occaſion very great Changes, in numerous reſpects. See Dr. *Hook's Diſcourſe of Comets.*

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Caſe in Nature; and that the abovemention'd *Machinery* of the Aſtronomers is but a *Fiction*, or a mere empty Impoſition upon Nature; the ſame Judgment may be likewiſe paſſed upon the Opinion of the *Eternity of the celeſtial Bodies*, which is joined therewith, and built upon it.

The Neutrality of the Scripture in this Matter.

19. But if any one ſhould here attack us from *Religion*, we anſwer; 'Tis only the Heathen Arrogance that attributes this Eternity to the *Heavens* alone; whereas the Scriptures attribute it both to the *Heaven* and *Earth*: For we not only read, that the *Sun and the Moon are eternal and faithful Witneſſes in Heaven*; but alſo, that *Generations ſhall come and go, but the Earth endure for ever:* Whilſt of the frail and periſhable Nature of both, 'tis at once ſaid, *the Heavens and Earth ſhall paſs away, but the Word of the Lord ſhall not paſs away*[p].

The Extremities of the Heavens towards the Earth greatly infeſted.

20. If any one ſhall ſtill inſiſt, tho it cannot indeed be denied, that infinite *Changes do happen on the ſurface of the Earth*, and the Parts adjacent; but not after the ſame manner in the *Heavens*; we anſwer, that we do not compare them together in all reſpects; and yet to take thoſe call'd the *upper* and *middle Regions of the Air* for the *Surface*, or *Covering of the Heavens*; as we do that upper Part, or Cruſt, wherein Animals, Plants, and Minerals are contained, for the *Covering of the Earth*; there will alſo be a great variety of Generations found therein. And thus all kinds of Tumults, Conflicts and Diſorders, may ſeem to have place only in the *Confines* of the *Heavens* and *Earth:* As we ſee in *political Government*, it frequently happens, that the Frontiers of two Kingdoms are infeſted with continual Incurſions and Outrages; whilſt the Heart, or more central Provinces of each enjoy a continued *Peace*; or are only now and then moleſted with deſtructive *Wars*.

Heat denied by Ariſtotle *to the celeſtial Bodies.*

21. As to that other kind of *Heterogenity*, conſiſting in a denial of Heat to the *celeſtial Bodies*, invented by *Ariſtotle*, to prevent the *Conflagration of Heraclitus*, and making them only *heated* by Accident, in rubbing againſt and beating the *Air*; we are at a loſs to know what *Ariſtotle* could mean by thus forſaking Experience, and running oppoſite to the Conſent of the Ancients. But 'tis no new thing with him, to ſnatch a *ſingle Inſtance from Experience, and immediately to inſult Nature with it, in the manner of a Bravo*[q]. But we ſhall ſay more to this Point under the *Queſtion*, Whether *the Stars are real Fires*[r]: Propoſing, however, to treat it more accurately, and at large, in our *Directions for the Hiſtory of the Cardinal Virtues of Nature*; where we ſhall explain the *Nature* and *Origin* of *Cold* and *Heat*; a Subject hitherto *unknown* and *untouch'd*[s]. Thus much may ſerve to the

[p] See the Arguments drawn from Revelation, for or againſt any *Aſtronomical Syſtem*, briefly conſider'd in *Wolfius's Elementa Aſtronomiæ, Schol.* 4, 5, 6. pag. 503, 504.

[q] Perhaps no Commentator ever underſtood *Ariſtotle's Works* better than our Author.

[r] See hereafter, pag 40.

[s] The *Hiſtory* here intimated was never publiſh'd: We may, however, make ſome Conjecture what it would have been, from the *Sylva Sylvarum*; the *Hiſtory of Winds, Life and Death*, &c. Mr. *Boyle* ſeems to have had a direct View to ſupply it; which he has done, in ſome meaſure, by his Hiſtory of *Cold*; but his *Enquiry into Heat* was unfortunately loſt. See Dr. *Hook's Lectures of Light*.

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ſtate of the *Queſtion, as to the Heterogenity of the Heavens.* Perhaps, the nature of the thing might require that *Ariſtotle*'s Opinion ſhould here be condemned, without farther delay; but it is not our preſent buſineſs to paſs *Sentence.*

Queſtion (2.) What are the Contents of the interſtellar Spaces?

22. Let the *ſecond* QUESTION be, *What are the Contents of the interſtellar Spaces?* For they are, (1.) either empty, as *Gilbert* imagin'd, or, (2.) fill'd with a Body, which may be to the *fixed Stars*, as *Air is to Flame*; or, (3.) fill'd with a lucid Body, homogeneous to the Stars; tho of a leſs bright, and vibrating Nature. This latter ſeems to be the common Opinion, in making the *Stars* the denſeſt part of their own Orbits: For a leſs lucid Body may be tranſparent, and tranſmit a ſtronger Light; ſince, as *Teleſius* accurately obſerved, even the common *Air* may hold ſome Light; becauſe there are certain Animals that ſee by Night, whoſe Eyes are fitted to receive, and be affected by, a very ſmall degree of Light: For 'tis not ſo probable, that the *Act of Viſion* ſhould be performed without *Light*, or from the bare *internal Light* of the viſual Spirits[a]. Flame itſelf alſo appears tranſparent; ſo as to tranſmit the Image of an opaque Object; as we ſee by the Wieck of a burning Candle: And much eaſier might it tranſmit intenſer Light than itſelf. Again, ſome Flames are paler than others. This proceeds either from the nature or quantity of the Body inflamed: for the Flame of *Tallow* or *Wax* is more luminous and fiery, than the Flame of *Spirit of Wine*; which ſeems ſomewhat more opaque, and, as it were, aerial; eſpecially, when in a ſmall quantity; ſo as not to thicken itſelf. And to this purpoſe we have made an *Experiment*, by cauſing *Spirit of Wine* to burn around a flaming Taper; where it was eaſy to perceive the Flame of the *Wax-Candle* ſhining white, thro the midſt of the weaker and more duſky Flame of the *Spirit of Wine.* In like manner, we frequently ſee ſhining Gleams ſhooting in the Air, that of themſelves afford a manifeſt Light, and remarkably illuminate or diſſipate the Darkneſs of the Night; whilſt, at the ſame time, we perceive the Stars, clear thro the Bodies of theſe Gleams.

Perhaps a luminous Subſtance of the ſame Nature with the fixed Stars.

Their difference not well explained by Denſity in the Stars, and Rarity in the Æther.

23. But this Difference between the *fixed Stars* and the *interſtellar Æther* is not well defined by *Rarity* and *Denſity*; ſo as to make the *Star* denſe, and the *Æther* rare: For here below, Flame is generally a more ſubtile, and more rarified Body, than *Air:* and the like may probably obtain in the celeſtial Regions. But 'tis a groſs Error to conceive the Stars to be a part of their own Orbits, and, as it were, nail'd on to them; which confounds the *fixed Stars* with the *others.* This is no more than a *Fiction*; for the *Stars* in their courſe muſt either cut the Æther, or the Æther revolve with them. For tho they ſhould move obliquely, they muſt neceſſarily float thro the Æther. And we have above obſerved [b], that the *mechanical Notion of contiguous Orbs framed together, ſo that the Concavity of the ſuperior Orb ſhould receive the Convexity of the inferior, as in a po-*

[a] See Sir *Iſaac Newton*'s *Opticks.* Quer. 16. pag. 321, &c.
[b] See above, 18.

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a poliſh'd Groove, without hindering each other's Revolution, has no reality: Whilſt the Body of the *Æther* is one continued thing, like the Body of the *Air*[v]; only becauſe there is a great diverſity found betwixt them, with regard to *Rarity* and other *Properties*, it is convenient to diſtinguiſh them into different Regions, for the ſake of Information and Clearneſs. Let the preſent QUESTION, therefore, be conſidered, as we have here explained it[w].

24. Next follows a *complex* QUESTION *concerning the ſubſtance of the Stars*; wherein we are firſt to enquire, *Whether there are any other Globes of ſolid and compact Matter, beſides the Earth?* For it may be juſtly conceived, that Nature, in the diſtribution of Matter, did not work up the whole ſtock of compact Body into this ſingle Globe of Earth; whilſt there appears to be ſo large a number of others, conſiſting of a rarer and more expanded Subſtance. *Gilbert* has indulged this Thought ſo immoderately (tho ſome of the Ancients were before him in it) as to aſſert, not only the *Earth* and *Moon*, but numerous other ſolid and opaque Globes, to be diffuſed among the ſhining ones, thro the vaſt expanſe of the Heavens. He likewiſe ſuppoſes, that even the *ſhining Globes* themſelves, as the Sun, and all the brighteſt Stars, conſiſt of a certain ſolid, tho more ſhining and equable Matter; thus confounding *original Light* with *ſecondary Light*, or *Splendor*; which is only Light reflected[x]: For he alſo imagined, that our *Sea*, did, of itſelf, dart out Light, to a conſiderable diſtance. The ſame Author acknowledges no *Globes* of other than ſolid Matter; and the Atmoſpheres about them, he ſuppoſes to be only the ſubtile Parts or Effluvia thereof; whoſe expanſion, at length, ceaſing, leaves the unpoſſeſſed Space a *Vacuum*.

Queſtion (3.) *Whether there are any compact and ſolid Globes beſides the Earth?*

25. And, certainly, the Suppoſition of the *Moon*'s being a ſolid and material Body, may juſtly require a very diligent and ſerious Enquiry, from thoſe who deſire to ſearch into the Works of Nature: For the Moon does not tranſmit Light, but reflect it; has, in a manner, no Light of her own; and is full of Inequalities: Which are all *Properties of a ſolid Body*. And we ſee, that both the *Æther* and the *Air*, which are rare Bodies, receive the Light of the *Sun*; but not reflect it as the *Moon* does[y]. And the Rays of the *Sun* are ſo active, as to penetrate and paſs thro the denſeſt *Clouds*,

Whether the Moon be a ſolid Body?

[v] See above, Sect. I. 18, &c.

[w] It is before obſerved, that Sir *Iſaac Newton* has ſhewn the *interſtellar Spaces* contain but a very ſubtile Matter; or elſe that *Æther*, allowing its Exiſtence, makes no conſiderable Reſiſtance to the *Planets* and *Comets* continually floating in it: But what this *Æther* is, has not been hitherto ſatisfactorily ſhewn, by *Induction*: Tho there ſeem to be a conſiderable number of Experiments and Obſervations, made by the Moderns, which, if duly laid together, might afford ſome Light in this Matter. See above, Sect. I. 17, 18.

[x] See the Table of *Enquiry into Light and Splendor*, towards the beginning of the SCALA INTELLECTUS, VOL. III. See alſo, Dr. *Hook*'s *Lectures of Light*.

[y] Let it be remember'd, that Light is not viſible in the Rays of Light themſelves, for a Beam of the Sun being admitted into a dark Room, has no effect on the Eye; but only, as it is reflected by the Particles of Duſt or Effluvia, continually floating in the Air. See *Newton. Princip.* Lib. III. pag. 467. and *Opticks*, *paſſim*.

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Clouds, which are of an aqueous ſubſtance; but they do not thus paſs thro the *Moon*. The *Moon*, however, is obſerved, in *Eclipſes*, to have ſome little obſcure *Light*[z]; but in the *New Moon*, the *increaſe*, and the *wane*, there is none found; except on the Part illumin'd by the Sun. Again, impure and turbid Flames, ſuch as *Empedocles* ſuppoſed the *Moon* to be, are certainly unequal; tho then theſe inequalities are not fix'd, but generally moveable: Whereas the *Spots*, and duſky parts of the Moon, are thought to be conſtant. Add to this, that theſe *Spots in the Moon* are alſo found, by the *Teleſcope*, to have their leſſer inequalities; ſo that the *Moon* is now certainly known to be variouſly figured: And that *Geography*, or *Map of the Moon*, which *Gilbert* conceived in his Mind, may now, by the Induſtry of *Galileo*, and others, ſeem to be actually making[a].

Whether there be not other ſolid celeſtial Bodies beſides the Moon.

26. But if the *Moon* really conſiſt of a certain ſolid Matter, like the Earth; let it next be conſidered, whether *ſhe be the only celeſtial Body of this kind:* for *Mercury* alſo, is ſometimes found in conjunction with the *Sun*, as a little *Spot*, or *minute Eclipſe*, of that *Luminary*[b]. But thoſe very black Spots found in the *Southern Hemiſphere*, as fix'd and conſtant as the *milky Way*, may give us ſtill farther ſuſpicion, that there are *opaque Globes*, even in the *higher parts of the Heavens:* For it ſeems improbable, that the Heavens in thoſe places ſhould be *thin*, and, as it were, perforated; becauſe ſuch a decreaſe and want of viſible Matter, could by no means ſtrike the ſight at that diſtance: whilſt, at the ſame time, all the reſt of the *Æther* is inviſible to us, and undiſtinguiſhable; but by compariſon with the Bodies of the *fixed Stars*. It ſhould ſeem probable, that theſe Blackneſſes are owing to a defect of Light; becauſe there are few *Stars* found in that Quarter of the Heavens: as, on the other hand, there are more obſerved about the *Milky Way*; which, therefore, appears continually luminous; as the others appear dark. For the *celeſtial Fires* ſeem placed nearer together in the *Southern Hemiſphere*, than in the *Northern*; or the fixed Stars to be there fewer, and the ſpaces between them larger. But the Account of theſe *Spots* is not hitherto well verified; at leaſt, the diligence uſed in obſerving them has not been ſo conſiderable as to allow of Conſequences to be drawn from it[c].

Many inviſible dark Globes may be diſperſed in the Heavens.

27. It comes cloſer to the preſent Enquiry, *that there may be more opaque Globes, diſperſed thro the Æther; tho no way viſible:* For the *Moon* in her firſt

[z] Suſpected owing to her *Atmoſphere*. See the late *Aſtronomers*; but particularly *Wolfii Elementa Aſtronomiæ*, p. 467.—472.

[a] And is now actually delineated by the Labours of *Hevelius*, in his *Selenographia*, and by others. See *Wolfii Elem. Aſtronom.* pag. 470, &c.

[b] Every one knows, that all the *Planets*, with their Satellites, are, in the preſent Syſtem of *Aſtronomy*, allow'd to be a kind of Earths; and the *Comets* themſelves a kind of *Planets*. Sir *Iſaac Newton*'s Determination of their Motions and Situations, from the *Law of Gravity*, is a great preſumption for the Truth of this Suppoſition.

[c] For a farther Account of theſe Particulars, conſult Father *Noel*'s *Obſervationes Mathematicæ & Phyſicæ in India & China factæ Wolf. Elem. Aſtron.* 420, 421. 594, 595, &c. and the Philoſophical Tranſactions. *Lowth. Abridg.* VOL. I. p. 247, &c.

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firſt and earlieſt appearance, ſtrikes the Eye, from the ſide illumin'd by the Sun, with a thin Rim, or external Part of a Circle; but remains inviſible in the other part of her Face; or undiſtinguiſhable from the *Æther:* And the *Satellites of Jupiter* are drowned from the ſight, like little inviſible Iſlands, by the Ocean of *Æther* they float in. So, likewiſe, if that infinite number of *ſmall Stars* which now ſet thick together, make the *Milky Way*, were placed ſeparate, and at a diſtance from one another, they would perfectly eſcape our ſight; as numberleſs others do, which ſhine in clear Nights; eſpecially in the Winter Seaſon. Thus, again, many *nebulous Stars*[d] are now diſtinctly number'd, by means of the *Teleſcope*; which has alſo actually diſcovered dark Parts, Spots, and Inequalities, in that pure Fountain of Light the *Sun*[c]. And, certainly, if nothing elſe, yet the Gradation obſerved among the *Stars* in point of Light; deſcending from ſuch as are moſt clear and bright, to ſuch as are duſky and obſcure; may perſuade us, that *poſſibly there are Globes perfectly opaque:* For, the degree from a *nebulous Star* to an opaque Body, ſeems to be leſs than from the brighteſt Star, to a nebulous *one*. Beſides; the human ſight is plainly limited, and deceived: For whatever is diſperſed in the *Heavens*, that has no remarkable Magnitude, nor affords a ſtrong and vivid Light, lies concealed from us, and alters not the face of the *Heavens*.

28. And let no unſkilful Perſon be here ſurprized at putting the QUESTION; *Whether Globes of compact Matter may hang and float in Æther?* For the *Earth* itſelf floats pendulous in the midſt of its own ſoft bed, the *Atmoſphere:* And vaſt Maſſes of watery *Clouds*, and *Mountains of Snow*, hang in the Regions of the *Air*; and are thence rather precipitated, than ſuffer'd to deſcend, before they approach near the Earth. Whence *Gilbert* very well obſerved, that *heavy Bodies removed to a vaſt diſtance from the Earth, gradually loſe their motion of Deſcent*; which Motion has its Origin from no other appetite of Bodies, than that of coming to and aſſociating with the *Earth*, which is the Maſs of Bodies of its own Nature[f]. And this Motion is terminated within the Sphere of its own Activity: For as to what Men talk of a Motion to the *Earth's Centre*, this were *to make a mere nothing have an active Virtue*, and attract all things to itſelf; whereas one Body can never be acted upon, but by another[g]. *That ſolid Bodies do float in the Æther.*

29. This QUESTION, therefore, *concerning opaque and ſolid Globes*, tho it be new, and may ſound harſh to vulgar Ears, ſhould be received into our Hiſtory of *Philoſophical Aſtronomy*, and coupled along with that other ancient QUESTION, hitherto undetermined; viz. *Which of the Stars afford an original Light of themſelves; and which receive their Light from the Sun?* The Determination of this QUESTION will range the Stars into *Suns* *The Stars to be ranged into Suns and Moons.*

[d] For theſe, conſult the Authors laſt mention'd.

[c] See the *Philoſoph. Tranſact. French Memoirs, Wolfius*, &c.

[f] This is only, in other words, expreſſing the Motion of Gravitation to the Earth.

[g] This ſeems to be the ſame Doctrine as Sir *Iſaac Newton* intends, when he endeavours to aſſign the Cauſe of Gravity; by means of a *ſubtile Matter*. See the *Queries at the End of his Opticks*.

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Suns and *Moons*. To theſe two QUESTIONS ſhould likewiſe be annexed the *Enquiry into the different ſubſtance of the Stars, in reſpect of each other*: For their Subſtance appears to be various; ſome being found conſtantly and manifeſtly *reddiſh*; others *livid*, others *white*, others *bright* and *ſhining*, others *nebulous*, &c[h].

Queſtion (4) Are the fixed Stars ſo many Fires?

30. Let the fourth QUESTION be this. *Are the fixed Stars actual Fires?* This QUESTION requires to be prudently ſtated, and diſtinctly underſtood: For 'tis one thing to ſay, that the *fixed Stars* are real Fires; and a very different one, to ſay that they have all the Virtues, and produce the ſame Effects as common culinary Fire. We do not here mean any notional or imaginary Fire, that retains only the Name, without having the Properties of Fire: For if our common Fire were to be placed in the Æther, in ſuch a quantity as 'tis in a *fixed Star*, it might produce different Effects from what we find among us here below. All *Natures* have very different Virtues; not only according to their Quantity, but alſo their Situation, with reſpect to other things. For the larger Maſſes of Matter, or Bodies of the ſame Nature, which are collected together, in ſuch a quantity as bears ſome proportion to the ſum of the Univerſe, have certain *coſmical Virtues* in their Wholes, that are no way found in their Parts. Thus the Ocean, which is a huge collection of Water, ebbs and flows; but Ponds and Lakes have no Motion of this kind. So again, the whole Body of the Earth hangs pendulous; but ſmall portions of the Earth drop and fall downwards. Whence the ſituation of a thing is of the greateſt Moment, in every reſpect, both in the larger and ſmaller Portions thereof; by reaſon of agreement, or diſagreement, of the things which lie contiguous or adjacent to it[i].

The Fire of the fixed Stars different from culinary Fire in reſpect of Situation.

In reſpect of Subſtance.

31. But there muſt neceſſarily happen a greater diverſity between the Fire of the *fixed Sars*, and our *Fire* below; becauſe they differ not only in *Situation*, but ſomewhat alſo in *Subſtance*: For the *ſtellar Fire* is pure, entire, and native; but our Fire is degenerate; and, like *Vulcan* thrown from Heaven to Earth, proves lame with the Fall. Thus, to obſerve it cloſely; Fire, with us, ſeems to be out of its own Situation; trembling, ſurrounded with its Oppoſites, needy, and requiring a conſtant ſupply of Aliment to preſerve it from ſudden periſhing: Whereas, in the Heavens, Fire ſeems, in its due and natural Situation; ſeparated and removed from all oppoſite Violence; conſtant in itſelf; preſerved by things of its own likeneſs; and performing its proper Operations, free and unmoleſted. *Patricius*, therefore, had no occaſion, for ſolving the *pyramidal Form of Flame*, as 'tis found among us, to feign, that the upper parts of the Stars oppoſite to the Æther might be *pyramidal*; tho the lower parts oppoſite to us are

The difference betwixt celeſtial and culinary Fire.

[h] This is done in a very agreeable, geometrical Manner, by *Wolfius* in his *Element. Aſtronom.* ſo far as the preſent Diſcoveries reach. Thus all the *Planets* and *Comets* are made *Moons* to the *Sun*, in the ſolar Syſtem; and all the *fixed Stars* probably ſhewn to be *Suns*, with their ſeveral Moons about them.

[i] See this Doctrine more largely explained by Mr. *Boyle*, in his *Coſmical Qualities*, and *Coſmical Suſpicions*.

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are globular: For this *pyramidal figure of Flame* is only accidental, and proceeds from the preſſure and conſtriction of the Air upon it; which thus ſqueezes it from the round figure it has about its own Fewel, and gradually forms it into a Pyramid: Whence *Flame* becomes broad at the Baſis, and ſharp at the Vertex; contrary to what happens in Smoke, which appears like an inverted Pyramid; becauſe the *Air* receives Smoke, but compreſſes Flame. Hence it ſhould ſeem probable, that as *Flame* is pyramidal here below, 'tis globular above[k].

32. So likewiſe *Flame* below is a momentary Body, but in *Æther* permanent and durable; and even with us, *Flame* might remain, and ſubſiſt in its own Form, were it not deſtroy'd by the Bodies which ſurround it; as manifeſtly appears in *large Flames:* For Flame ſituated in the midſt of, and totally ſurrounded by another Flame, is not deſtroy'd; but remains in a rapid Motion, numerically the ſame, and unextinguiſhed. The Violation of Flame begins from the ſides; and thence proceeds its Suffocation. And that an internal Flame will permanently continue of a globular figure, whilſt an external Flame plays and vaniſhes in a pyramidal one, may be experimentally demonſtrated, in two Flames of different Colours[l]. *Flame in Æther permanent.*

33. There may likewiſe be a great difference in the *heat of the celeſtial and terreſtrial Flame:* For the celeſtial plays, and ſpreads itſelf with eaſe and freedom, as in its own proper Sphere; whilſt the terreſtrial is bound down, burns and rages, as in a Sphere not its own: For all Fire burns the ſtronger for being pent up, and impriſon'd; and even the Rays of the celeſtial Flame, after they arrive at more denſe and ſtubborn Bodies, depoſite their gentleneſs, and become more violent and ſcorching. *Ariſtotle*, therefore, need not have been afraid that *Heraclitus*'s Conflagration would fire his World, tho he had allowed the *Stars* to be real Fires[m]. This QUESTION, therefore, may be received according to the Explanation here given of it. *Difference betwixt the celeſtial and terreſtrial Flame.*

34. The next QUESTION may be this. *Do the Stars receive nouriſhment, increaſe, diminution, generation, and extinction?* 'Tis certain, that ſome of the Ancients imagined, from rude and vulgar Obſervation, that the *Stars* were nouriſhed, like Fire; and fed from the Waters, the Ocean, and moiſture of the Earth; or recruited by the Vapours and Exhalations thereof: But this Notion is unworthy of being made the Subject of a QUESTION. For, as we before obſerved[n], ſuch Vapours never reach any thing near the height of the *Stars*; nor is their Stock, by any means, ſufficient to recruit the Waters here below, refreſh the Earth by Rain and Dews, and at *Queſtion (5.) Are the Stars fed, and capable of Extinction?*

[k] See Dr. *Hook's Lectures of Light paſſim.*

[l] For inſtance, the white one of Wax, or a proper Compoſition of *Camphire*, ſurrounded by the blue one of *Spirit of Wine.*

[m] The Author's *Experiments* and *Diſcoveries* upon the Subject of *Light*, *Fire* and *Flame*, tho he has no where proſecuted the Enquiry, as he intended, ſeem to lay the Foundation, whereon Dr. *Hook*, Mr. *Boyle*, and Sir *Iſaac Newton* have ſince proceeded. See, in particular, Dr. *Hook's Lectures of Light.*

[n] See above, §. 17.

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the ſame time nouriſh and feed ſuch vaſt Numbers, and ſuch huge Maſſes, as the *celeſtial Globes*: whilſt 'tis manifeſt that the *Earth* and the *Ocean* have not viſibly loſt of their Moiſture for ſo many Ages; whence there ſeems to be as much returned back as was raiſed in Vapour[o].

The Stars not fed after the manner of common Fire.

35. Nor do the Stars require to be nouriſh'd after the manner of our Fire. For where Matter is loſt, and waſted, ſomething of the like kind is ſupplied and aſſimilated; which kind of Aſſimilation has its Origin in Bodies, from their being ſurrounded with things contrary to, or unlike, themſelves: But nothing of this kind can be ſuppoſed to happen in the internal and ſimilar parts of the *fixed Stars*; no more than in the lower parts of the Earth; which alſo ſeem not to be nouriſh'd, but preſerve their own ſubſtance by *Identity*, and not by *Aſſimilation*[p]. But concerning the outward parts of the Bodies of the Stars; 'tis a proper QUESTION, *Whether they remain in the ſame conſtant Tenor, without preying upon, and ſome way tinging the Æther they float in.* And in this ſenſe let the QUESTION be put concerning the Nutrition of the Stars[q].

Queſtion (6.) Whether the Stars increaſe, or diminiſh in their wholes?

36. To the foregoing QUESTION may be properly annexed another concerning *the increaſe or diminution of the Stars in their entire Bodies*; tho there are but very few Phænomena to occaſion the doubt. For firſt, there is no Example, nor any thing of the like nature, found here below, to countenance the *Queſtion*; ſince our own *terraqueous Globe* appears to receive no remarkable increaſe or diminution in its whole; but preſerves its bulk and quantity, uniformly and entire[r]. And tho the Stars appear to our ſight, ſometimes greater, and ſometimes leſs, in their Bodies; yet this alteration of their ſize may be owing either to their greater or leſs diſtance from the Earth, as in the Apogeés and Peregées of the Planets, or to the *diſpoſition of the Medium*[s]. But the alteration here cauſed by the *diſpoſition of the Medium* is eaſily diſtinguiſhed, becauſe it affects the appearance of no ſingle Star, but the appearance of them all equally; as we find in froſty Nights, when all the Stars ſeem larger on this account, that the Vapours riſe more ſparingly, or are more forcibly held down, than whilſt the entire Atmoſphere is ſomewhat condenſed, and brought a little to an aqueous or cryſtalline nature, which magnifies Objects[t].

Falſe appearances of the Stars from the interpoſition of the Clouds.

37. And if any particular *Vapours* ſhould interpoſe between a *Star* and the *Sight*, ſo as to magnify that Star, which frequently and manifeſtly happens in the Sun and Moon, and therefore may do the ſame in the other celeſtial

[o] See this Matter conſider'd by Sir *Iſaac Newton*, *Princip.* Lib. III. pag. 473. Or, ſee above, §. 7. and the *Note* thereon.

[p] See above, §. 7. and the *Note* thereon.

[q] See the Queſtion diſcuſſed by Dr. *Hook*, in his *Lectures of Light*.

[r] See the Note upon §. 7. above.

[s] See ſome uncommon Obſervations made to this Purpoſe in *Wolf. Element. Aſtronom.* p. 594, 595.

[t] Compare this with Sir *Iſaac Newton. Princip.* Lib. III. p. 467, &c. and the Modern Doctrine of *Refraction*. See *Wolf. Elem. Aſtronom.* Cap. VII. *De Refractione & Parallaxi Bizarum.*

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celeſtial Globes, yet this appearance cannot deceive us, becauſe ſuch alteration of Magnitude does not continue, or follow, the *Star* in its Motion; but the Star ſoon gets clear of it, and recovers its uſual appearance. There has, however, in ancient times, and again in our own, happen'd a great and moſt remarkable *Change* and *Renovation* in the Planet *Venus*, both as to *Magnitude*, *Colour*, and *Figure*[t]. Since therefore the *Change* which conſtantly and regularly follows a Star, and revolves along with its Body, muſt neceſſarily be in the *Star* itſelf, and not in the *Medium*; and ſince thro a neglect of Obſervation, many things that do viſibly happen in the Heavens, may eſcape us; we judge it proper to receive this *part of the* QUESTION into our HISTORY.

38. The other *part* of the QUESTION; *viz. Are the Stars generated and diſſipated in a long ſeries of Ages?* is of the ſame kind, but countenanced by a greater number of Phænomena; tho of one kind only. For as to all the old *Stars*, there is no mention made of the firſt appearance of any one of them, thro all the Ages of the World; excepting only that idle Story of the *Arcadians* about the *Moon*: Nor, to this day, is there any one wanting of their number. But for the *Comets*, which both in their Form and Motion reſemble the *Planets*; they ſeem to be perfectly *new Stars*, whoſe appearances and diſappearances we have ourſelves ſeen, as well as received from the Ancients. (1.) Some imagine theſe *Comets* to be ſpent and conſumed in time; (2.) Others judge them to be rarified and reſolved into Æther; (3.) others, that they only abſent themſelves for a ſeaſon, and return again; and (4.) others, that they appear to us only in their *Perigées*, or near Approximations to the Earth, and then go back again from our ſight to the higher Regions of the Heavens in their *Apogées*. But this entire Queſtion concerning the *firſt appearance of new Stars*, we aſſign to that place which treats *expreſly of* COMETS[v]. *Whether Stars are generated and diſſipated?*

39. There remains a *ſeventh* QUESTION concerning the *Milky Way*; *viz. Whether the Milky Way be a collection of minute Stars, or a continued Body, and part of the Æther, of a middle nature betwixt ſtellar and æthereal?* The Opinion, that the *Milky Way* was an Exhalation, is long ſince exploded, to the merited Reproach of *Ariſtotle*; who dared to impoſe a tranſitory and changeable Nature, upon ſo *fixed and conſtant a Phænomenon*. And, indeed, the QUESTION, at preſent, ſeems to be decided by *Galilæo*; who has divided that confuſed *Tract of Light* into diſtinct and ſmall fixed Stars. For that the *Milky Way* ſhould not intercept the ſight of the other *Stars* betwixt it, does not determine the Point; nor incline the *Queſtion* either way. *Queſtion* (7.) *What is the* Milky Way?

[t] That *Venus* is horned, or has the ſame *Phaſes* as the Moon, is now commonly known, and allowed. See *Wolf. Elem. Aſtronom.* p. 480, 481.

[v] The Author, we ſee, deſigned to have treated the QUESTION of Comets; but I find it no where among his Works. He ſeems to have had a Foreſight of the preſent *Cometary*, as well as *Planetary Syſtem*: And, for the preſent *Syſtem of the fixed Stars*, he had it in great Perfection. We obſerved in our *Preface*, that the *Piece* is imperfect.

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way. Only it may, possibly, intimate, that the *Milky Way* is not placed lower than the *Sphere of the fixed Stars*: For if it were, and a continued Body of some Thickness, it probably would intercept the *Sight*. But if placed at an equal Height with the *fixed Stars* that seem to appear thro it; doubtless there may be *Stars* in the *Milky Way*, or in other parts of the Æther. We therefore receive this QUESTION, that the Point may be fairly decided [w].

Question (8.) What is the Number of the Stars?

40. The QUESTIONS *for determining* (1.) *the Number*, (2.) *the Magnitudes*, (3.) *the Figures*, and (4.) *the Distances of the Stars*, abstracted from the *Phænomena* and *Historical Questions* [x], which we shall hereafter propose, are little more than *simple philosophical Problems* [y]. Thus, with regard to the *Number of the Stars*, let it be enquired, *Whether there be so many of them as there appears to be, or more? and compare them with the Catalogue carefully made by* Hipparchus, *and laid down in their places on the celestial Globe.* For it is but a superficial Reason which is offer'd for the appearance of an innumerable Multitude of latent or skulking Stars, on clear and frosty Nights, that this Phænomenon should not be owing to the existence of any smaller Stars; but only to the shining, sparkling and vibrating Motions of those already known. *Galilæo* has discovered new *Nations* of little *Stars*; not only in the *Milky Way*, but also in the Region of the Planets themselves. And Stars may be invisible, not only by the Smallness of their Bodies, but also by their Opacity; and again by their elongation and distance from the Earth. But we refer the QUESTION *concerning the additional number of the Stars*, from the generation of *new ones*, as we did that of their first appearance, and disappearance, to the place where we shall treat of the COMETS [z].

Question (9.) What their Magnitude?

41. (2.) As to the *Magnitude of the Stars*; their *apparent Magnitudes* is matter of Observation; but their real one matter of *Philosophical Enquiry.* Let it therefore be sought, *What is the real Magnitude or Dimension of each Star, either absolutely or comparatively?* For 'tis easier to discover and demonstrate, that the *Globe of the Earth* is bigger than the *Globe of the Moon*, than that the *Globe of the Moon* is so many Miles in Circumference. But let the utmost Endeavours be used to ascertain their precise *Magnitudes*; and if these cannot be procured, let their *comparative Magnitudes* be noted. Their *real Magnitudes* are to be had either from *Eclipses*, and their Shadows; or from the extent of their Light and other Virtues; which each Body projects and diffuses, to a greater or smaller distance, in proportion to its Magnitude: And again, from the Proportion and *Symmetry of the Universe*, which, by a certain Necessity, terminate and ascertain the Limits of

[w] See *Wolf. Element. Astronom.* Cap. VIII. *de Stellis fixis & novis, atque Cometis.* Particularly, *Observation* 36.

[x] Observe, that the Author calls an *Account of Facts* by the Name of *History*; which we now often call by the Name of *Observations.*

[y] But these are wanting.

[z] See above, §. 38.

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of Bodies of the ſame individual Nature. But no great dependance, *as to the real Magnitudes of the Stars, ſhould be had upon the Menſurations and Calculations hitherto given us by Aſtronomers:* For tho this has the appearance of great Care and Exactneſs, yet 'tis too licenciouſly and raſhly undertaken; whence *more genuine and truſty methods of Proof ſhould be diligently enquired after.* The Magnitudes and Diſtances of the Stars mutually indicate each other, by optical Proportions; tho theſe require to be more thoroughly ſifted and diſcuſs'd[a].

42. (3). The Queſtion concerning the *Figures of the Stars* may be put thus. *Are the Stars real Globes*, or *Collections of Matter into a ſolid and ſpherical Figure?* The Stars to the Eye ſeem to have three different Figures; *viz.* (1.) one that is *ſpherical* and *radiant*, as the *Sun*. (2.) *ſpherical* and *cornuted*, as the *fixed Stars*; and (3.) *ſimply ſpherical*, as the Moon. But here the *Radiancy* and the *Angles* regard only the Sight; and the *ſpherical Figure* only the Subſtance of the Bodies themſelves. 'Tis remarkable, that among all the *Stars* there is none of an *oblong*, *triangular*, *ſquare*, or other *polygon* Figure. And it ſhould ſeem, as if all the larger maſſes of things naturally collected themſelves into *Globes*, for their own Preſervation, and the exacter Union of their Parts[b]. *Queſtion (10.) What their Figures?*

43. (4.) Laſtly, *What is the true Diſtance of each Star in the Depth of the Heavens?* For the ſide Diſtances of the *Planets*, as well in reſpect of one another, as of the *fixed Stars*, are governed by their Motions. And here, as we juſt now obſerved of the *Magnitude of the Stars*, if their *exact Diſtances* cannot be had, at leaſt, let their *reſpective Diſtances be adjuſted.* Thus if we do not know the true Diſtance of *Saturn* or *Jupiter* from the Earth; yet this we ſhould be certain of, that *Saturn* is higher in the *Syſtem* than *Jupiter*. But hitherto the *planetary Syſtem* is not ſettled, nor the *Order of the Planets Places*, above one another, abſolutely adjuſted: The Diſpute ſtill remaining with ſome, which is the higheſt, *Mercury* or *Venus*[c]? *Queſtion (11.) What their Diſtances?*

44. The

[a] Great Accuracy appears to be uſed by the later Aſtronomers, in procuring finiſhed Inſtruments for the buſineſs of Obſervation; eſpecially by *Hevelius*, Dr. *Hook*, and many others, ſince the *Inſtitution* of the *Royal Obſervatories* at *Greenwich*, *Paris*, &c. And upon a Collection of Obſervations made in this way it is, that Sir *Iſaac Newton* builds his Theory of the *Moon*, and the whole *Solar Syſtem*. But, as our Author obſerves of his own Time, ſo ſtill greater *Preciſion* is, even at preſent, required in this Matter. And, perhaps, it were not amiſs, if the *Mathematical Philoſophers* would verify their Obſervations, by the due Uſe and Improvement of the *phyſical Method*, here laid down by the Lord *Bacon*: For it is highly probable, that the *beſt ways of making Aſtronomical Diſcoveries*, are not yet known. It is very ſeldom, that ſuch eminent *Contrivers*, and *Inventors*, as the Lord *Bacon*, Dr. *Hook*, and Sir *Iſaac Newton* appear; and yet till many ſuch Genius's ſhall have contributed all their *Stock*, Philoſophy will not be perfect; unleſs Men of more ſlender Capacities could, as doubtleſs they might, be taught the ART OF INVENTING. See the *Novum Organum paſſim*, and Dr. *Hook*'s *Method of improving Natural Philoſophy*.

[b] According to the Modern Diſcoveries, the Sun, and all the Planets, and Comets, are ſpherical, or, rather, according to Sir *Iſaac Newton*, *ſpheroidical*.

[c] See theſe Particulars adjuſted by the later Aſtronomers, in *Wolf. Elem. Aſtronom. paſſim*.

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44. The Way of diſcovering the true Diſtances of the Stars is, (1.) by their *Parallaxes*; (2.) by *Eclipſes*; (3.) by their *reſpective Motions*; and (4.) by their *different apparent Magnitudes*. But other Aſſiſtances are to be procured for this purpoſe; and ſhould be recommended to the future Induſtry of Mankind [d].

[d] Certainly, the Moderns have nobly proſecuted this grand Enquiry: and yet we ſhould not ſtand ſtill, as if all were performed by Sir *Iſaac Newton*, who has, indeed, done Wonders; but ſtill proceed, with Vigour and Alacrity, to farther Diſcoveries; which himſelf directs, and has laid Foundations for. Great Genius's are never ſatisfied with making new Diſcoveries in their own Perſons; but always endeavour to lead Mankind into the way themſelves have trod, deſiring to be outdone by Poſterity. And the greater the Soul, the more it indulges this worthy Appetite. Hence our Author, in particular, ſeems to have wholly bent himſelf upon putting all things in the direct way of Enquiry and Determination; which is a near Approximation to Diſcoveries, and infinitely preferable to a few imperfect Diſcoveries themſelves; as teaching both the preſent and future Generations, what Particulars are to be chiefly regarded, and ſought after, for bringing Philoſophy to perfection.

SUP-

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SUPPLEMENT X.

A

Short Scientifical Critique

ON THE

WORKS of the more EMINENT PHILOSOPHERS, Ancient and Modern.

PRE-

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PREFACE.

THE following is an imperfect Piece, *found among the* Posthumous SCRIPTA, *published by* Gruter. *But, imperfect as it is, it will, perhaps, be esteemed, by competent Judges, of no small Value; as tending to free Mankind from the Tyranny of great Names, and leave us at liberty to follow* Nature.

What particular Use the Author designed it for, or in what Part of his Works he would have introduced it, had he liv'd to revise and finish it, I cannot say: But it manifestly appears, by the whole Tenour, to have an Eye to the Novum Organum; *up to which it directly leads. It might, therefore, have been properly placed at the Entrance of that Work; were it not required as a* Supplement to the *De Augmentis Scientiarum*[a].

It may be reasonably supposed, that many of those who have read the Works of the Philosophers *censured by the Author, will not perceive the Justness of the* Censures. *A cursory Reading of them is not sufficient for this Purpose: It requires an intimate Knowledge of Nature, and of what Men, by proper application, are capable of performing, to judge of the Validity or Invalidity of the* ancient *and* modern Philosophies.

Besides; if we would not flatter ourselves, we lie under a kind of Incantation, *from* Prejudice, Prepossession *and* Custom, *with regard to great Names, and Authors, celebrated thro numerous Ages; whence some of us cannot, tho we strongly desired it, use a freedom and justness of Thought in this Matter. But those who are most themselves, and can here exercise a free and independant Judgment, will, perhaps, perceive, that the Author, with a few Master-Strokes, has drawn the* ancient Philosophers, *and their* modern Followers, *to a truth; and wish the Work were continued down to later Times, to shew us, as in one* Picture, *what it is that the great Men of all Ages have busied themselves about.*

[a] See that Work, Sect. XIX. of CRITICISM.

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A FREE CENSURE, OR CRITIQUE, Of the more Eminent Philoſophers, &c.

SECT. I.

The Arraignment of the Philoſophers.

1. WE plainly perceive, that the Sciences will not be conſiderably advanced, till Men ſhall be once made thoroughly acquainted with the proper Characters, and Merits, of thoſe ancient and modern Philoſophers they ſo much admire. The preſent Deſign is, therefore, to deal roundly; and fix a Mark upon ſuch *pretended Philoſophers* as we take to have been more *fabulous* than the Poets; *Debauchers of Mens Minds*, and *Falſifiers of the Works of Nature*[f]; and to make, at leaſt, as free with that degenerate, ſervile Tribe, their Followers, Flatterers, and the Hirelings, who corrupt Mankind for *Gain*[g]. And we ſhall take the liberty to cite each of them by *Name*; leſt, as their Authority is ſo great, we ſhould be apprehended only to *act a part*; and, under

Admiration of the Ancients prejudicial to the Sciences.

[f] Theſe Expreſſions will loſe of their Strangeneſs, if the Reader be acquainted with the Author's Pièces *De Augmentis Scientiarum* and *Novum Organum*.

[g] This aims at *Profeſſory Inſtitutions*; *deſtin'd* to teach the *Philoſophy* of *Ariſtotle*, ſuppoſe, or any other Author, inſtead of the *Philoſophy of Nature*.

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under colour, ſide with ſome or other of them [h]; ſince they cheriſh ſuch violent Diſputes and Animoſities among themſelves.

The Character of Ariſtotle.

2. Let ARISTOTLE firſt appear; whom we charge, (1.) with *abominable Sophiſtry*; (2.) *uſeleſs Subtilty*; and, (3.) *a vile ſporting with Words.* Nay, when Men, by any Accident, as, by a favourable Gale, arrived at any Truth, and there caſt anchor; this Man had the aſſurance to fetter the Mind with the heavieſt Irons; and compoſing a certain ART OF MADNESS [i], enſlaved Mankind with Words.

Again, from the nurſing and tutoring of this Man, have ariſen a ſhoal of *cunning Triflers*; who, turning their backs upon Nature, and all the Light of Things and Hiſtory [k], overſpread the World with numerous *Mock-Schools*; rais'd, by the reſtleſs agitation of Wit, principally upon that extremely ductile Matter of his *Precepts* and *Poſitions* [l]. But they indeed, are more excuſable than their *haughty Dictator*; becauſe they did not, like him, *offend againſt better light and knowledge*: For he, after having trod in the open Plains of *Hiſtory*, and viewed the *Works of Nature* [m], yet dug to himſelf a Dungeon, and fill'd it with the *vaineſt Idols* [n]. And, what adds to his Guilt, he has, even upon the *Hiſtory of Particulars*, raiſed certain *Cobweb Structures*, which he would palm upon Mankind for CAUSES; whilſt, in reality, they are matters of no Validity nor Value; but nearly reſembling thoſe, which, in our time, that *Antipode* to Things, as well as to himſelf, *Cardan*, buſied himſelf in forming [o].

Cardan.

Ramus.

But whilſt I thus arraign the *Works of Ariſtotle*, let me not be ſuppoſed a *Conſpirator*, and in League with *Ramus*, that modern Rebel againſt him. I have no affection for that *ſculking Hole of Ignorance*, that deſtructive *Book-worm of Learning*, that *Father of Epitomes*, who, when he wrings and preſſes things with the *Shackles of his Method*, *and Contraction*; the Subſtance, if there was any, immediately ſtarts out, and eſcapes him; whilſt he graſps nothing but the empty Chaff, and exhauſted Carcaſs [p].

Aquinas.

[h] The Candor and Impartiality of our Author ſeems every where preſerved. Thus, tho he, even in his youth, perceived the vanity, and ſmall ſignificance of *Ariſtotle's Philoſophy*; yet he omits no Occaſion of recommending ſuch Particulars in it, as are any way juſt and uſeful. The ſame Conduct he preſerves with regard to other Founders of Sects, &c. ſo as to be deſervedly eſteemed the Father of the modern *Eclectic Philoſophy*.

[i] Calmly to view the ſeveral Syſtems of *Philoſophy* that have prevailed in ſeveral Ages; what are they more than ſo many *Arts of Madneſs*? See the *Novum Organum*, Part I. Sect. I, &c.

[k] Without a Metaphor, neglecting *Experience* and *Obſervation*.

[l] This explains the *Art of Madneſs* abovementioned; for, as in *Natural Madneſs*, Men argue upon things that have no Exiſtence or true Foundation; ſo, in *Philoſophical Madneſs*, we reaſon about things, whoſe Hiſtory, or true State, we have no clear and certain Knowledge of, from Experiment and Obſervation: But as Madmen do, take all for granted, according to our *frantic Notions*.

[m] *Ariſtotle* was for a time converſant in the *Hiſtory of Nature*; as appears particularly from his *Hiſtory of Animals*.

[n] What thoſe *Idols* are, ſee in the *Novum Organum*, Part I. Sect. II.

[o] It requires, as was obſerved in the *Preface*, a conſiderable Knowledge in the *Works of Ariſtotle*, to ſee the juſtneſs of theſe Obſervations. And the ſame muſt be underſtood of all the following *Authors*.

[p] See more to this purpoſe in the *De Augmentis Scientiarum*, Sect. XVIII. of *Rhetorick*.

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Aquinas has gone further, and ſpun a *variety of things* out of nothing; leaving, by way of compenſation, a *Solitude* in things themſelves. And altho he has done this, yet he has the aſſurance to be frequently talking of *human Uſes*; ſo that I take him for a moſt *prevaricating Sophiſter*. And the ſame Accuſation I likewiſe bring againſt *Scotus*, and his Followers[q]. Aquinas.

3. Let PLATO next appear; whom we charge with being (1.) a *well-bred Sophiſter*; (2.) a *tumid Poet*; and (3.) a *fanatical Divine*; who, by finely poliſhing, and working together, certain *philoſophical Rumours*; and diſſembling his *pretence to Knowledge*; endeavoured to looſen and unſettle Mens Minds by *vague Inductions*; and has thus indeed ſupplied abundant matter of *Table-Talk* to Men of Letters, in reſpect of *civil Converſation*, *polite Life*, ornament, and ſweetneſs of *familiar Diſcourſe*: But when he falſly aſſerted, that *Truth was not an Inhabitant of the human Mind, but a Stranger come from far; and turn'd Mens Thoughts* from the *Hiſtory of Nature*, and from *Things* themſelves; (tho never ſufficiently applied thereto) and taught the Mind to enter into itſelf; and there, under the Name of *Contemplation*, to tumble over its own *blind and confuſed Idols*[r]; then it was he committed the *capital Crime* of which we accuſe him. And no leſs impiouſly has he introduced the *Canonization of Folly*; and had the aſſurance to ſkreen his degenerate and corrupt Notions under the *Cloak of Religion*. And here lies the *ſtrength of the Charge*. But for his being the *Father of Philology*, *polite Literature*, and *elegant Writing*, who by his Example, Authority and Succeſs, captivated, perſuaded, and led Numbers to content themſelves with a *Character* for *Wit*, *Politeneſs*, *Agreeableneſs*, and a *popular knowledge of things*, to the Detriment and Corruption of a ſevere and rigorous Enquiry after Truth; we account this a leſs heinous Offence. And among the Men thus captivated by him, we reckon *Cicero*, *Seneca*, and *Plutarch*, with numerous others, no way comparable to them[s]. *The Character of Plato.* Cicero, Seneca, Plutarch.

4. Let us next proceed to the *Phyſicians*; and firſt ſummon GALEN to appear: whom we implead, (1.) *as a Man of a very narrow Mind*; (2.) a *Deſerter of Experience*; and (3.) an *idle Caviller*. This is the Man that would ſkreen the ignorance and ſloth of Phyſicians from their deſerved Reproach; and preſerve them unattack'd; whilſt himſelf moſt feebly and unequally pretends to perfect their *Art*, and fill up their Office. This is the Man, that, like the raging *Dog-Star*, or the Plague, devotes Mankind to *Death* and *Deſtruction*, by pronouncing ſuch TRIBES OF DISEASES INCURABLE; taking away all glimmering of hope, and leaving no room for future induſtry. This is the Man, who makes his own *fiction of Mixture* to be Nature's ſole Prerogative. This the Man, that is every where fond of ſhewing and boaſting the *Sedition*, *Strife*, and *Diſagreement betwixt the celeſtial Heat and that of Fire*: And upon this, and all other occaſions, maliciouſly *curbs the human Power*; and endeavours to *ſurround and protect* Galen's Character.

Ignorance

[q] See a farther Account of the *Schoolmen*, in the *De Augment. Scientiar.* Prelim. Sect. III. 33.

[r] See *Nov. Organ.* Part I. Sect. II.

[s] Mere *Platoniſts*, or Men of Contemplation, muſt not here be the Judges: But thoſe well verſed in *Phyſical Knowledge*, the Doctrine of *Buſineſs*, the *Wants of Mankind*, and the Ways of ſupplying them.

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Ignorance with eternal Despair. 'Tis owing to this Man's Unworthiness, that we dwell no longer upon his Charge. Let him then be dismiss'd; and take along with him, his long train of Associates; those *Dispensatory Compilers* the *Arabians*, who have shewn such Folly in their *Theories*; and from their *supine* and *jejune Conjectures*, amassed together such *Heaps of Promises*, instead of real Helps, from *vulgar Remedies*. And let the Rear be brought up with that superficial Tribe of *modern Doctors*, whose Names are not worth the mentioning[s].

The Arabian Physicians.

Fernelius.

5. We must, however, make some difference in this *Tribe of Triflers*; the worst and most absurd sort whereof, are those who have pent the whole Art into *strict Methods*, and *narrow Systems*; which Men commonly cry up for the sake of their Regularity and Style: and such a kind of Author is *Fernelius*. But they are less prejudicial to the *Art*, and to Mankind, who deliver a *large stock* and *variety* of *Observations*, *Experiments*, and *particular Cases*, even tho they pollute and obscure them with their absurd and foolish Reasons, idle Hypotheses and Solutions; like *Arnoldus de Villa Nova*, and others of the same Stamp.

Arnoldus de Villa Nova.

The Character of Paracelsus.

6. On the opposite side stand the *Tribe of Chemists*, with PARACELSUS at their Head; who, for his Insolence, deserves to be separately chastised, as a *flagrant Example*: For those accused above are only *Falsifiers* and *Pretenders*; but this Man is throughout a Monster. What *Bacchanalian Oracles* are those he utters in *Meteorology*; whilst he is ridiculously aping of *Epicurus*? All that *Epicurus* offers upon the Subject is but *drowsy Opinion*, which he unconcernedly left to its *Fate*; but *Paracelsus*, blinder than *Fate*, and more rash than *Chance*, is ready to avouch the absurdest Falshoods. What Dreams of *Resemblances*, *Correspondences* and *Parallels* of the Productions of his *Elements*, are given us by this *fanatical Linker-together of Idols*? His *three Principles*, indeed, might be received with some Utility; as having a *Foundation in Nature*: But he is continually wresting them to every thing, according to his great Dexterity in *Delusion* and *Imposture*. But these are not the worst of his *Crimes*: For, besides all this, he, like a *sacrilegious Impostor*, has mix'd and polluted *divine things* with *natural*; *sacred* with *prophane*; *Fables* with *Heresies*; and *human Truths* with *religious*; so as not, like the *ancient Sophists*, to have hid, but utterly extinguished that *sacred thing* he has so frequently in his *impious Mouth*, the LIGHT OF NATURE. The *Sophists* were only *Deserters of Experience*, but *Paracelsus* has *betray'd* it; and subjecting the crude and personated Evidence of things to Rules of Contemplation, and deriving the various alterations of Substances from imaginary Motions; he has thus endeavoured to corrupt the *Fountains of Science*, and *dethrone the human Mind*. At the same time, so far is he from understanding, or justly representing *Experience*, that he has added to the Trouble and Tediousness in *experimenting*, of which the *Sophists*

[s] Some sober *Physicians*, who have read *Galen* with Care, may, perhaps, avouch, this *Character* does not suit him. If so; let it be examined whether such *Physicians* are acquainted with the imperfect state of *Physick* in different *Ages* and *Countries*; whether they are sensible of its Imperfections; and can lay down any solid Scheme for improving it.

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phiſts complain, and to which the *Empiricks* are unequal. In ſhort, he has every where, to the utmoſt, magnified the abſurd Pretences of *Magicians*; countenanced ſuch Extravagancies; and encouraged others to believe them, from his own Aſſurances; being thus, at once, the *Work* and *Servant* of *Impoſture*[t].

7. 'Tis great pity he ſhould ever have found ſuch an Abettor and Apologiſt as SEVERINUS; whoſe Abilities might have been much better employed, than upon the Fooleries of that Man. It is *Severinus*, who has *modulated the Brayings of that Aſs*[v]; and by his own ſkill in Muſick, play'd then ſweetly off, in *a fine variety of Tunes*: And thus converted *ſhocking* and *monſtrous Fictions*, and *Falſhoods* into *pleaſing* and *delightful Fables*. This Author, indeed, is the more excuſable, in that, being ſick of the Doctrine of the *Sophiſts*, which is not only barren of Works, but profeſſedly tends to introduce *Deſpair*, he went in queſt of firmer Foundations, in this general Decay of Philoſophy and Arts. And thus when the Works of *Paracelſus* offered themſelves, and came recommended with pompous Shew, the ſubterfuge of Obſcurity, affinity with Religion, and other Impoſtures, *Severinus* gave into them, delivered not the real *Fountains of Things*; but only throw'd out Promiſes and Hopes, with ſomewhat of Warmth and Indignation: Whereas, would he have acted as he ought, he ſhould have left the *Determinations* and *Maxims* of *Wit* and *Genius*, and gone over to the real *Doctrines* and *Precepts* of *Nature*; which alone is the way to *ſhorten Arts*, and *lengthen Life*[u]. Severinus.

8. This *Charge* we have brought againſt *Paracelſus* ſeems to aſtoniſh the reſt of the *Chemiſts*; who greedily ſwallow thoſe *Decrees* and *Points of Doctrine* which he has rather promulgated and promiſed, than actually laid down, or made good; and defended them with *Arrogance* inſtead of *Caution*. His whole *Tribe of Followers* appear link'd to one another by the *lying Spirit* that ſhews itſelf in their ſwoln *Hopes* and *Promiſes*; which they are conſtantly boaſting. However, by wandering thro the *Wilds of Experience*, they ſometimes ſtumble upon certain uſeful Diſcoveries; not by Reaſon, but by Accident[w]: Whence, proceeding to form Theories, they plainly carry the *Smoke* and *Tarniſh* of their Art along with them. For as that ſimple Youth, who finding a Stick upon the Shore, would needs convert it into a Ship; ſo theſe childiſh Operators at the *Furnace* muſt needs be *The* Chemiſts.

[t] The *Paracelſits* will, doubtleſs, be for interpoſing here: But they are excluded, by the Condition of the Enquiry. They muſt have better Talents, and greater Knowledge than their Maſter, before they can judge of his Merits.

[v] The Reader will pleaſe to remember, that this Piece is imperfect, and in the Original delivered under an *uncertain Form*; ſometimes by way of *Advice to a Son*, and ſometimes in the Form of *Pleading*: Which latter Form we have endeavoured to keep to; as admitting a greater freedom of Expreſſion. The Author was too well bred to uſe any coarſe or vulgar Language. What, therefore, may appear of this kind, muſt be ſuppoſed ſpoke under the Veil of Fiction.

[u] Without ſome Knowledge of the Works of *Severinus*, the Force and Juſtice of what is here ſaid will not be underſtood. The Author appears to have had all the *Works* he here cenſures ſtrongly impreſſed upon his Mind.

[w] See *De Augment. Scientar.* Sect. XII. of *Learned Experience.*

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be raiſing Philoſophy from a few *Experiments of Diſtillation*; and introducing, at every turn, their own *Idols of Separation* and *Analyſis*, where no Traces of them are really found[x].

9. Yet we do not accuſe them all in the *Lump*; but make a difference between that little ſerviceable Set, who, being not very ſollicitous about *raiſing of Theories*, principally practiſe a certain *mechanical Subtilty* in ſearching out, and laying hold of new *Inventions*, and *Diſcoveries*; with their extenſive Uſes; after the manner of Friar *Bacon*[y]; and diſtinguiſh theſe from that *impious Tribe*, who endeavour only at procuring applauſe to their *Theories*, and court and beg it by a pretended Zeal for Religion, by large Promiſes, and the Art of Impoſture; which is the way of *Baſil Valentine*, *Hollandus*, and much the greateſt part of the *Chemical Authors*[z].

The Character of Hippocrates.

10. Let HIPPOCRATES be next call'd to the Bar; whom we arraign (1.) as a *Creature patch'd up of Antiquity*; and (2.) *a Retailer of other Mens Knowledge*; under whoſe Authority, both *Galen* and *Paracelſus* ridiculouſly endeavour to ſhelter themſelves, like Aſſes under a Tree[a]. To do him juſtice, he ſeems to have had his Eyes at firſt perpetually fixed upon Experience[b]; but then they are fix'd indeed, ſtupid and immovable, without ranging, and ſearching for *noble*, *manly*, and *full Views*: And afterwards, recovering a little from this Stupidity, he takes in *certain Idols*[c]; tho not thoſe monſtrous ones of *Theories*, but ſuch as are more neat, elegant, and ſurround the limits of *Hiſtory*; and having drank theſe in, he becomes *ſwollen*, *ſophiſtical*; and, according to the Cuſtom of the Age he lived in, wraps himſelf up in Brevity; and thus, *as his Followers imagine*, *utters Oracles*, of which they are ambitious of being thought the *Interpreters*; *whilſt in reality he does no more than deliver* SOPHISTRY, *by broken, ſhort and interrupted Sentences, ſo as to prevent a Confutation; or elſe in a haughty manner records ſuch Obſervations as are trite, vulgar, and known to every Ruſtic*[d].

Celſus.

11. *Celſus*, as he is juſtly allowed, comes nearly up to the *Views* and *Deſigns* of *Hippocrates*, which are not ſo *faulty*, as they are *uſeleſs*; but he ſhews himſelf a more practiſed *Sophiſter*, and a better Modeller of *Hiſtory* than his Maſter. He is, however, for checking the advancement of Science, from *moral* and *civil Conſiderations*: Thus paring off the extremities of Errors, inſtead of cutting them down at the Root[e].

This

[x] This general *Cenſure* of the *Chemiſts* appears extremely juſt.

[y] Add to him, as capital Authors and actual Inventors of later Date, the Lord *Verulam*, Mr. *Boyle*, *Becher*, *Homberg*, and *Stahl*.

[z] It may appear ſurprizing, that the Author ſhould have known the *Chemiſts* ſo well, as to judge and diſtinguiſh thus accurately between them.

[a] See the *Note* upon Sect. 7. above.

[b] The Author's *Cenſure* of *Hippocrates* requires a Reader of extenſive Knowledge, free from Prejudice, and well broke to the ſelf-denying *Doctrine* of the *Novum Organum*.

[c] See the *Novum Organum*, Part I. Sect. II.

[d] *Hippocrates* has bore ſuch a high Character thro ſeveral Ages, that 'tis extremely hard to get rid of the Prejudice: But let his *Admirers* ſpecify what direct *Improvements* he has made in *Phyſick*; and whether he cured more Patients in proportion, than his Predeceſſors, or thoſe in other Countries, who never heard of his Name.

[e] In paſſing a Judgment on *Celſus*, we muſt guard againſt being impoſed upon by his Style; and conſider only his Matter: which, perhaps, is little more, or better, at bottom, than that of *Hippocrates*.

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This free Cenſure of the moſt eminent Men will, doubtleſs, have a ſtrange Appearance to many; and yet, in truth, we produce it not as an inflamed or aggravated Accuſation; but as the real ſtate of the Caſe, repreſenting the very bottom of their Writings, which Mankind are ſo fond of, and take for the *Pillars* and *Fabrick* of all *Arts* and *Sciences*[f].

SECT. II.

The Judgment to be paſſed upon the ancient and modern Philoſophers: With the intimation of a juſter way of building up the Sciences.

Objections to the preceding Characters.

1. IT may be alledg'd, that we have above repreſented the worſt ſide of *Antiquity* and the *Philoſophers*; eſpecially as the *Sciences* generally appear in a ſtate of *Democracy*[g]; that Time, like a River, has brought down to us only ſuch Wrecks of former Ages as were light, and ſuperficial; but ſunk all that were ſolid and ponderous: That great things have been done by thoſe ancient Enquirers after Truth, *Heraclitus*, *Democritus*, *Pythagoras*, *Anaxagoras*, *Empedocles*, and others, whoſe Writings are loſt; and that the *Silence* and *Knowledge* of *Antiquity* are not to be lightly eſteemed. To all which we will here anſwer, in our natural manner, candidly, and with a view to the good of Mankind[h].

Anſwer'd. (1.) *That ſomething may have been done by the Ancients.*

2. And firſt, I acknowledge a *Fragment* or two of early Antiquity; by which I do not mean *Books*, but *Inventions*; that are, however, rather, a Specimen of the Author's Diligence and Ingenuity, than deep Knowledge, in reſpect of *Philoſophy* and the *Sciences*; and handed down to us by other Writers. But for thoſe things which have never come down to us, nor any Traces of them, 'twere an endleſs Labour to make Conjectures about them. Nor can I think it at all proper for me, who am engaged in doing the utmoſt Service I am able for Poſterity, to go back to the *Philology* or *polite Literature* of the Ancients. But in order to give Mankind a view of the prophetical *Janus*-face of the preſent ſtate of things, and how it looks both back upon times paſt, and forward upon times to

[f] As the Author has been ſo free in his Cenſures of the former *Philoſophers*, it may very juſtly provoke a thorough Sifting and Examination of himſelf. This we could wiſh to ſee done by a Hand equal to the Work; and ſuch an one as could not be ſuſpected of Prejudice, or Partiality, for or againſt him. And were it not alſo proper, that ſuch a free Sifting and manly Cenſuring ſhould be continued down to later Authors; in order the better to examine how far the Sciences are improved?

[g] And are therefore not to be judged of by the Laws of *Ariſtocracy*, as the Author may ſeem to have done by cenſuring the *Heads*, or moſt capital Philoſophers of Antiquity; inſtead of the *Sciences* themſelves, diſperſed among the Body of Mankind.

[h] For a thorough Expurgation, it may be proper to peruſe the whole *De Augmentis Scientiarum*, and *Novum Organum*.

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come, I have determined within myſelf to form Tables of both theſe times; which may not only exhibit the Courſe, and the Ebbs and Flows of Knowledge; but likewiſe other Apprehenſions and Foreſights of things. Nor, perhaps, can the World have a notion, what kind of Performance this will be, till they ſee it; or, were it not to be put into their Hands, know how to aſk for, or expect it; as they are now bound and enthrall'd[i]. For this we lay down as a certainty, that *Knowledge is not to be fetch'd from the darkneſs and obſcurity of Antiquity*; but *to be derived from the* LIGHT OF NATURE. Nor does it ſo much concern us to know what *has been done*, as to ſee what *may be done*. Would a private Man, put in poſſeſſion of a *Kingdom*, ſubdued by Arms, and right of Conqueſt, raiſe Queſtions and Diſputes, whether his Anceſtors poſſeſſed it before him; and perplex himſelf with Rumours of Genealogies and Deſcents; or would he not rather ſecure his Poſſeſſion, and eſtabliſh his Dominion?

No wonder if the Ancients have fallen into Error.

3. And whoever conſiders the Matter cloſely, will not find it ſtrange, that the above-cenſured *Heads of Sects*, and numberleſs others, of the ſame kind, ſhould fall into Errors, which are various and endleſs; whereas Truth is but one ſimple ſingle thing. And had not the *Policy* or *Foreſight of Times* been oppoſite to ſuch wild Wanderings of the *human Genius*, no doubt but many other Coaſts of Errors would have been rambled over: for 'tis *an immenſe Ocean that ſurrounds the Iſland of Truth*; and there ſtill remain many *pernicious Idols*, of late invention, to be *thrown down*[k]. Thus *Teleſius* lately trod the Stage, and acted a new philoſophical Romance; without any great Elegance or Applauſe. And to this day the Motions of the Heavens are, by fabulous *Aſtronomers*, perplexed with *Eccentricks* and *Epicycles*; and the *Stability* and *Mobility of the Earth* are ſtrenuouſly pleaded for on both ſides, from the uncertain atteſtation of *Phænomena*[l]. And this is the general Caſe of *Theories*, in which Men uſually proceed, as he would do, who underſtanding no Language but his own, ſhould undertake to interpret a Book in another; where obſerving that a few Words up and down correſponded, in Sound and Letters, to the Words of his own Language, he immediately aſſerts, with Confidence and Aſſurance, theſe Words to be of the like ſignification, (tho they might frequently differ very widely) and thence, by farther compariſon, with great Labour and Trial of Wit, and, at the ſame time, with great Licentiouſneſs, divines the Senſe and Meaning of the whole. And juſt ſuch Interpreters, Philoſophers generally are, of the Senſe and Meaning of *Nature*, in the grand Volume of the Univerſe; for every one brings his own *particular Idol*,

[i] The Work here mentioned, tho, perhaps, never executed, in the Form of *Tables*; at leaſt, never publiſhed by the Author; may very well have been conceived in his Mind: And whoever deſires to have ſome perception of the thing, may, with due attention, derive it from the Author's Pieces *De Augmentis*, the *Sapientia Veterum*, the *Novum Organum*, and the *Phænomena of the Univerſe*. But the whole might have appeared to much greater Advantage, if any conſiderable Progreſs had been made in the *Secondary Philoſophy*, or ſixth and laſt Part of the *Grand* INSTAURATION.

[k] See the *Novum Organum*, Part I. Sect. II.

[l] See the *Specimen of Animated Aſtronomy*, SUPPLEMENT IX.

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Idol, as it were his Mother-Tongue, to the *History of Nature*; and as soon as he finds any thing sound like it, this he eagerly catches at, and interprets every thing else analogous thereto[m].

That the Author has been in earnest with his Characters.

4. 'Tis now time we should expatiate ourselves, after handling such prophane and polluted Matters; tho it has been only with a desire of Improving. And we here declare, that all the *Charges* we have brought against the *Philosophers*, fall far short of their Guilt: Tho we do not expect the generality should understand in what manner we have convicted them. But they may be assured, that the Censures pass'd upon them have not the least participation of *Calumny* or *Scandal:* For I have not here, like *Velleius* in *Cicero*, acted the *Declamer*, who lightly touched Opinions, and then threw them aside, without entering into their Merits; much less, done like our modern *Agrippa*, who, indeed, deserves not to be mention'd in a Discourse of this Nature; as being a *trifling Scoffer*, that aims to wrest and make sport with every thing[n]: But whoever looks intently, and is qualified to see it, will find that, under the *Veil of a feigned Severity*, there are *just* and *stinging Accusations* couched, contracted to a little compass, and, not without some Address, thrown directly into the Ulcers of the Mischief. And tho they all seem involved and embroiled together in the same Crimes and Guilt; yet I have accused each of them with that only which is peculiar to himself, and of a capital Nature. For the human Mind, swoln with the *Incursions* and *Observations of Things*, works up, and draws out of them, Errors of various Shapes and Forms: So that *Aristotle*, for example, appears like a tall Plant, of a particular Species; *Plato*, as another of a different kind; and so of the rest.

Avoids more particular Confutations, and why.

5. But for me to enter into *particular Confutations* of their several Works, would be a heinous Offence, an Injury to the *Fortunes of Mankind*, and consume the Time, destin'd to their Service, in a Conflict with *Shadows*; which may vanish of themselves. Indeed, the only thing required, is to set up the BRIGHT AND SHINING LIGHT OF TRUTH; which may illuminate all the things around it; and in a moment disperse all the Errors and Darkness with which Mankind are beset[o]: For it would be endless to carry weak and sickly Tapers about into all the sculking Holes and Corners of particular Errors and Falshoods.

That some Truths have been discovered by the Ancients.

6. But notwithstanding what we have said, it must not be supposed, that all which the Philosophers above-mentioned have delivered, is perfectly vain and false: For there is no one of them but has sometimes stumbled upon a Truth; and indeed their Errors seem rather owing to their

[m] This is properly a Species of *Philosophical Madness*. See above, Sect. I. 2. and the *Introduction* to the *Novum Organum*.

[n] I suppose the Author has his Eye more immediately upon that Piece of *Agrippa*, entitled *De Vanitate Scientiarum*; a Title as different from his own *De Augmentis Scientiarum*, as the two Persons, and their Abilities.

[o] This was the Design of the *Novum Organum*; which the Author had once entitled, *Aphorismi & Consilia, de Auxiliis Mentis, & Accensione* LUMINIS NATURALIS. But as that Work was left imperfect, we have only some Portion of this *Grand Light* held out to us.

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great Unhappineſs, than to their *Ignorance*. When *Heraclitus* declared, that *Men ought to ſeek for Knowledge, not in the private World of themſelves, but in the common external World*, he ſeems to have laid a juſt Foundation for Philoſophy. When *Democritus* attributed *immenſe Variety, and infinite Succeſſion to Nature*, he ran counter to nearly all the other Philoſophers; who abſolutely went down with the ſtream of their times; enſlaved to Cuſtom: and by this Oppoſition he deſtroyed both Falſhoods, daſhing them one againſt the other; and thus opening a way to Truth betwixt the two Extremes, he happily ſhewed himſelf a *Philoſopher*. The *Numbers* of *Pythagoras*, likewiſe promiſed ſome good Event. *Dindamus* the *Indian* ſpoke well, when he called Death by the Name of *Nature's Enemy*. *Epicurus* alſo is tolerable; tho he diſputes but weakly, and with philological Arguments, againſt the Explanation of *intentional* and *final Cauſes*. Even the ſceptical *Pyrrho*, and the fluctuating *Academicks* (tho confined to ſcanty Bounds, and behaving themſelves to their *Idols* like peeviſh Lovers, that are always quarrelling, but never part) may be read in the way of Recreation; for whilſt others are made to drag their *Anchors*, by their *Idols*; the *Academicks* are only whirl'd round in their Cock-Boat. Nay, *Paracelſus* and *Severinus* make excellent Heralds; and ſound the alarm to *Experiments*.

The Difference betwixt Idolatrous Knowledge, *and the* True.

7. But ſhall we ſay that theſe Men were in poſſeſſion of *Truth*? They were certainly far from it. 'Tis a good homely Proverb: *That a Hog, tho by rooting the Ground he may make the firſt Letter of the Alphabet, yet cannot write a Play.* For the *Truth* diſcovered by Analogy of Knowledge, is widely different from that delivered by the ſtart of an *Idol*: The former is regular, conſtant and manifold, whilſt the other is incongruous, unſteady and ſingle; and the Caſe is the ſame in *Works*. Thus the Diſcovery of *Gun-powder*, had it not been accidental, and a ſudden ſtart, but the effect of Reaſoning, would not have been ſingle; but accompanied with a Number of other noble Inventions, which fall under the ſame *Meridian*. Underſtand the like of other Works and Poſitions[p]. I would therefore require, if any ones *Idol* ſhould in any Point interſect the Truth of the things I have here laid down, that he be not hence conceived the better, nor I the worſe of; as 'tis manifeſt this Difference muſt proceed from Ignorance, and not from any Analogy of Knowledge[q].

The Writings of the Ancients to be ſtill preſerved.

8. After all; we hope no one will conceive our Intention is to condemn the Writings of the *ancient and modern Philoſophers to the Flames*[r], or the *Service of the Grocer*. They have ſtill ſome Uſe; tho, indeed, but little, and of narrow Extent; very different from that they were deſigned for, and are at preſent employed in. To this we may add, that many other *Writings*, of leſs Fame and Note, are much more uſeful than thoſe of the Philo-

[p] See this proſecuted in the firſt Part of the *Novum Organum*.

[q] This will not be underſtood, unleſs the *Doctrine of Idols*, delivered in the *Novum Organum*, be maſter'd.

[r] As Mr. *Hobbs* is ſaid to have done.

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Philoſophers. The *Ethicks* of *Ariſtotle* and *Plato* have found numerous Admirers; but the *Moral Obſervations* of *Tacitus* expreſs Nature more to the Life. But for the particular Uſes to be made of theſe *Writings*; which of them are more ſerviceable than others; and how ſmall a part of them conduce to the *Interpretation of Nature*, we may ſhew in due time[f].

9. It may here be aſk'd, *Will the Author pretend himſelf alone to ſupply the place of all the Philoſophers he thus cenſures and rejects?* He anſwers candidly, and without Diſſimulation, that his ſole View is to join Mankind and Things together, in a ſacred, legitimate and inviolable Link; that from this Conjunction may proceed a happy *Race of Heroes*, to ſubdue the infinite Neceſſities of human Nature; and ſettle their whole Affairs in a plentiful, peaceful and happy Security[g]. *The Author's View in the whole.*

[f] See the *Novum Organum*, Part I. *paſſim.*

[g] Some Readers may be at a loſs to know what the Author drives at in this Piece; or in what ſenſe to underſtand him; unleſs they have been converſant in the reſt of his Writings. The Point of View is this; that the *ancient* and *modern Philoſophers*, taken in a Body, have miſerably miſpent their Time, and abuſed their Talents; without once entering into the high Road of Truth, or the way of making the proper Diſcoveries, for improving the *Arts* and *Sciences*, that might greatly benefit human Life. This every one may ſatisfy himſelf of, by examining what has been done by *Plato*, *Ariſtotle*, *Hippocrates*, &c. towards diſcovering the *Art* of *inventing Arts*; or making Life more happy and agreeable. For who among them has taught the Art of prolonging Life, or ſpinning the full Thread thereof to its natural Period, free from Diſeaſes, Pain and Sickneſs; ſo far, we mean, as the condition of Mortality permits? Who has ſhewn the way of curing inveterate Diſeaſes, as the *Stone*, the *Gout*, &c? Who has taught us to ſecure our Habitations from Fire, Inundations, Earthquakes; our Ships from Storms, and periſhing at Sea? Who has taught us to predict the Weather, or given us the leaſt Command of it? Who has ſhewn us a way to ſupply parched Countries with Water, where natural Springs are denied? Who has ſhewn us a practical way of governing our Appetites, and correcting our Vices; ſo as to prevent that Train of Ills which attend Tyranny, Oppreſſion, Superſtition, and falſe Religions? Numerous Inſtances of this kind might be mentioned, all tending to the accommodation of Life; which Philoſophers, as they are called, ſeem to have overlook'd, or deſpaired of. But theſe were the things that employed our Author's Thoughts; and *a Method of procuring Remedies for all human Evils, ſeems to have been the one capital thing he aimed at.*

SUP-

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SUPPLEMENT XI.

Interiora Rerum:

OR,

ESSAYS

UPON

MORAL, OECONOMICAL *and* POLITICAL SUBJECTS.

PRE-

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PREFACE.

OF all the Author's Works, his Eſſays *appear to have had the greateſt Currency; both in his own Life-time, and ſince. He judged the Reaſon to be,* that they came home to Mens Buſineſs and Boſoms. *And hence he ventured to predict, that the* Latin *Volume of them, being in the univerſal Language, might laſt as long as Books themſelves ſhould laſt*[t]. *And ſo, ſays a modern Well-wiſher to his Works, may the* Engliſh Edition *too; if ſome equal Hand would, once in a Century,* repair the Decays of their fleeting Language. *Certainly they enter deep into the Nature of* Men, *and* Things; *and contain very uſeful Inſtructions for the Conduct of civil Life. The Author in Modeſty entitles them* Eſſays; *but, perhaps, they are in ſtrictneſs,* Aphoriſms: *for they have a* Nerve; *a fullneſs of* Matter; *and really exhibit the* Inſides of Things, *without foreign Ornament; ſo as to verify their* Latin Title[v]. *It ſhould ſeem, they were rather intended to inſtruct* Men *than* Children; *and, perhaps, there are not many, who clearly perceive their full Scope and Utility. Whence both the Teacher and the Learner had need be intelligent, where theſe* Eſſays *are taught in* Grammar-Schools. *Poſſibly they are better adapted to the Uſe of Students in the* Univerſities; *who being come to ſome ripeneſs of Judgment, are a little verſed in the* Ways of Men. *The greateſt Politicians, or thoſe that are beſt acquainted with civil Affairs, need not bluſh to have them found on their Table.*

In the preſent Edition *they are divided into the three Parts indicated by their* Latin Title; *methodized according to their natural Order; collated with the later and fuller Latin* Edition; *and enrich'd by the Addition of ſeveral Pieces, originally written in* Latin, *by the Author, and never before tranſlated into* Engliſh.

It may not be improper to adverti ſe, that ſome Writers have objected to ſeveral Particulars in theſe Eſſays, *from a haſty Conſideration of a few obvious Inſtances; whereas the Author conſtantly practiſes the* METHOD OF REJECTION; *and never admits of his own* firſt Thoughts, *unleſs authoriſed by his ſecond; or, perhaps, by a more rigorous Trial;* viz. *the Art of redreſſing the* Infirmities *of the Mind, according to the Directions of his* Novum Organum.

[t] See his Dedication to the Duke of *Buckingham.*
[v] See the Author's Letter to *Father Fulgentio.*

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Interiora Rerum:

OR,

ESSAYS

UPON

MORAL, OECONOMICAL *and* POLITICAL SUBJECTS.

SECT. I.

ESSAYS UPON MORAL SUBJECTS.

ESSAY I. *Of* STUDIES.

1. STUDIES and Reading ſerve for *Delight*, *Ornament* and *Abilityy*; for *Delight* in Privacy and Retirement; for *Ornament* in Diſcourſe; and for *Ability* in the Judgment and Direction of Buſineſs. Expert Men can execute, and, perhaps, judge of Particulars, ſingly; but general Counſels, Schemes, and the marſhalling of Affairs, come beſt from the *Learned*. *The Advantages of Learning.*

2. To ſpend too much time in Studies, is *Sloth*; to uſe them too much for Ornament, is *Affectation*; and to judge wholly by their Rules, is *pedantick* and *unproſperous*. Letters perfect Nature; and are perfected by Experience: For natural Abilities, like Plants, require pruning by Study: and Studies themſelves give Direction too much at large, unleſs bounded by Experience. Crafty Men contemn Studies; ſimple Men admire them; and wiſe Men uſe them: For Letters do not ſufficiently teach their own Uſe; but this is a Wiſdom beyond, and above them, gained by Obſervation. *Its Uſe and Abuſe.*

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Directions for its Use, and Acquirement.

3. Read not to contradict and confute; nor to believe, and take upon trust; nor to find matter of Discourse; but to learn, consider, and use a free Judgment. Some Books should be tasted; others swallowed; and some few shou'd be chewed and digested: That is, some Books are to be read only in part; others to be read thorough, tho cursorily; and some few to be read and studied, with Diligence and Attention. Some Books also may be read by Deputy; and Extracts made of them by others: but this should be done only in the less important Subjects, and the meaner sort of Books: Otherwise, *distill'd Books* are like the common *distill'd Waters*; flashy things.

The different Effects of different Studies.

4. *Reading* makes a full Man; *Conference* a ready Man; and *Writing* an exact Man. Therefore, he who writes little has need of a good Memory; he who confers little, has need of a present Wit; and he who reads little, has need of much Cunning, that he may seem to know what he does not. *History* makes Men wise; *Poetry*, ingenious; *Mathematicks*, subtile; *Natural Philosophy*, deep; *Moral Philosophy*, grave; *Logick* and *Rhetorick*, able to contend: *Abeunt studia in mores* [w].

The Defects of the Mind remedied by Studies.

5. Nay, there is scarce any Impediment in the Mind, but may be removed by suitable Studies; as Diseases of the Body have their appropriated Exercises. Thus Bowling is good for the Stone and Kidneys; Shooting for the Lungs and Breast; gentle Walking for the Stomach; Riding for the Head, *&c.* So, if a Man's Wit be wandering, let him study Mathematicks; if not apt to distinguish, let him study the *Schoolmen*; if unapt to beat over Matters, and to call up one thing to prove and illustrate another, let him study *Law-Cases*: And thus every Defect of the Mind may have a particular Remedy [x].

ESSAY II. *Of* CIVIL CEREMONIES, *and* BEHAVIOUR.

Some degree of Ceremony necessary.

1. HE who is only real, had need have a plentiful stock of Virtue; as the Stone had need be rich, which is set without Foil. It is in Praise and Commendation, as in Gains: For as *light Gains make heavy Purses*, by coming thick, whilst large ones come but seldom; so *slender Virtues* procure *great Commendation*, because in continual Use; whereas the opportunity of exercising any capital Virtue comes but seldom: Whence it adds greatly to a Man's Reputation, and is like *perpetual Letters of Recommendation*, to have discreet and graceful Forms of Behaviour.

How to be acquired.

And to attain these, it almost suffices not to despise them: For thus a Man will observe them in others; and let him trust himself with the rest. For if he endeavour too much to express them, he will lose their Grace; which is to be natural and unaffected [y]. Some Mens Behaviour is like a *Verse*; wherein

[w] Studies turn into Habits; and appear in our Behaviour.

[x] The Merits of *Learning*, and *Studies*, here wrapt up aphoristically, are prosecuted at large in the entrance of the *De Augmentis Scientiarum*. See *Prelim.* §. III. And the Whole of the *De Augmentis* itself is an illustrious *Comment* upon this *Text*. The *Helps for the intellectual Faculties* are also touched upon in the *Author's Letter to Sir Henry Saville*, in SUPPLEMENT V.

[y] *Direction* can go no farther.

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wherein every Syllable is measured. How can a Man be equal to great Matters, who subjects his Mind to such trifling Observations?

2. Not to use decent *Ceremonies* at all, is teaching others not to use them again; and so diminishes the Respect due to one's self: Especially they should not be omitted to Strangers, and formal Natures. But to dwell upon them, and stretch them above measure, is not only tedious, but lessens the Credibility and Weight of the Speaker. There is a highly useful way of insinuating effectual and lasting Impressions along with Complements; if a Man have the Address[z]. Among Equals we are to expect Familiarity; and therefore 'tis here proper to keep a little State. Among Inferiors, one is sure of Reverence; therefore 'tis here proper to be a little familiar. He who is too profuse either in Words or Actions, so as to give another an occasion of Satiety, makes himself cheap. To apply ones self to others, is proper; provided it appear to be done out of Respect, and not Facility. 'Tis a good Precept, in seconding another, always to add somewhat of your own: thus if you assent to his Opinion, let it be with some Distinction; if you follow his Motion, let it be on condition; if you take his Counsel, let it be with alledging a farther Reason. *Where Ceremony is most useful.*

3. Men should be very cautious of appearing too great Masters of *Ceremonies*: For tho otherwise ever so sufficient, their Enviers will give them that Title, to the disadvantage of their greater Virtues. 'Tis a loss also in Business, to be too full of Respects, or too curious in observing Times and Opportunities. *Solomon* says, *He that considereth the wind, shall not sow; and he that looketh to the clouds, shall not reap.* A wise Man will make more Opportunities than he finds. Mens Behaviours should be like their Cloaths; not too streight, but free and easy[z]. *Not to be carried too far.*

ESSAY III. *Of* BOLDNESS.

Action in Oratory compared to Boldness in Business.

1. *Demosthenes* being ask'd, What was the chief Qualification of an Orator? he answered, *Action*. What next? *Action*. What next again? *Action*. He said this, who knew it best; and had himself, by Nature, no great Advantage in what he recommended. It may deservedly seem strange, that this part of Oratory, which is but superficial, and rather the Qualification of a Player, should be placed so high above those other noble parts, Invention, Elocution, and the rest. The Reason is, human Nature generally participates more of the *Fool*, than of the *wise Man*; and therefore those Faculties are the most prevalent, by which the weaker part of Mens Minds is taken.

The Case of *Boldness in civil Business* is extremely like, and parallel to this. What is the first Qualification in Business? *Boldness*. What the second and third? *Boldness*. And yet Boldness is the Child of Ignorance

[z] An over-modest Man is, perhaps, incapable of practising this *Art*; which seems founded in making another well pleased or satisfied with himself.

[a] See more upon this Subject in the *De Augmentis Scientiarum*, §. X. 2. *Of* CIVIL DOCTRINE.

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and Baſeneſs; far inferior to other Parts of *Civil Prudence*[b]: nevertheleſs, it faſcinates, and leads thoſe captive, who are either ſhallow in Judgment, or weak in Courage, (which are the many) and, even prevails over wiſe Men, at their weak times: whence we ſee it has done Wonders in *popular States*; but leſs with Senates and Princes. Nay, bold-ſpirited Men perform more at their firſt entrance upon Action, than afterwards: For *Boldneſs* does not ſtand to its Promiſe.

The Bold are Empiricks in Policy.

2. Surely, as there are Empiricks for the natural Body; ſo there are Mountebanks for the political Body: Men that undertake the moſt difficult Cures, and have, perhaps, been lucky in two or three Experiments; but wanting the Grounds of the *Science*, preſently fail. However, you ſhall often ſee your bold Fellows work *Mahomet*'s Miracle, and go to the Mountain, when the Mountain will not come to them; that is, when they have promiſed great Matters, and failed moſt ſhamefully, yet if they have the *Perfection of Boldneſs*, they will ſlight it over, turn themſelves round, and there's an end on't.

And the Ridicule of the Wiſe.

3. Certainly bold Perſons are a Sport to Men of Judgment: and even to the Vulgar, *Boldneſs* has ſomewhat of the *ridiculous*. For if Abſurdity be the Subject of Laughter; great *Boldneſs* is ſeldom without ſome Abſurdity. Eſpecially, 'tis a great Pleaſure to ſee a bold Fellow out of countenance; for that neceſſarily puts his Face into a moſt ſhrunk and wooden Poſture. In baſhful Perſons, the Spirits go and come a little; but in bold Men, upon the ſame occaſions, they ſtand like a *Stale at Cheſs*, where it is no Mate; and the Game cannot proceed[c].

The proper Uſe of Boldneſs.

4. It deſerves to be conſider'd, that Boldneſs is ever blind; for it ſees not Dangers and Inconveniencies: Whence 'tis bad in Counſel, tho good in Execution. The right Uſe of bold Perſons therefore is, that they never command in chief; but ſerve as ſeconds, under the Direction of others. For in Counſel, 'tis good to ſee Dangers; and in Execution, not to ſee them; unleſs they are very great[d].

ESSAY IV. *Of* SIMULATION, *and* DISSIMULATION.

The Uſe of Diſſimulation

1. *Diſſimulation* is the *Civil Art* in Epitome; and a faint kind of Policy: For it requires a ſtrong Head, and a ſtrong Heart, to know when to tell the Truth, and dare to do it: whence the weaker ſort of *Politicians* are the greateſt Diſſemblers. We muſt, therefore, carefully diſtinguiſh betwixt the *Civil Arts* and *Pretences*[e]. Thus, if a Man has the happy Penetration and Perſpicuity to diſcern what ſhould be laid open;

[b] See the *De Augmentis Scientiarum*, §. XXI. Of *Civil Prudence*.

[c] Obſerve, that in this Incident at *Cheſs*, the Game is not won; only the Partner cannot ſtir: Which aptly expreſſes the Caſe of a bold Man confounded.

[d] For more upon this Subject, ſee *De Augment. Scientiar.* §. XX. Of ETHICKS, OR MORALITY.

[e] See Prelim. to the *De Augment. Scientiar.* §. III. 10, 11, 12, &c. See alſo, the *Political Mythology of the Ancients*, in the *Sapientia Veterum*.

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open; what kept ſecret; what ſhould be ſhewed in Half-lights; and to whom, and when; (which are the true *Political* and *Civil Arts*, as *Tacitus* juſtly terms them) a Habit of Diſſimulation would be only a Hinderance. But if a Man cannot attain to this degree of Judgment and Diſcretion; 'tis generally beſt to be cloſe, and diſſemble. For where there is no choice in Particulars, 'tis the ſafeſt to proceed warily in the general; as they walk ſoftly, who are dim-ſighted. Certainly, the ableſt Men have been open and frank in their Dealings, and had the Reputation of Punctuality and Veracity; but then, like well-manag'd Horſes, they knew where to ſtop or turn. And if at any time they practiſed Diſſimulation, when the Caſe required it; their former Character of free and open Dealing render'd them perfectly inviſible[f].

2. There are three Degrees of veiling ones ſelf. The *firſt* is *Taciturnity*; whereby a Man keeps his Mind to himſelf, without diſcovering his Opinion to others. The *ſecond* is *negative Diſſimulation*; when a Man deſignedly drops Intimations that he is not what he is. And the *third is affirmative Simulation*; when a Man openly and expreſly feigns and pretends to be what he is not. *Three kinds of Diſſimulation.*

3. As for the *firſt* of theſe; viz. *Taciturnity*; 'tis the Virtue of a *Confeſſor*: and certainly the ſecret Man hears many *Confeſſions*. For who will open himſelf to a Blab? But the Reputation of Secrecy, eaſily unlocks the Minds of others. And as *Confeſſion* is not for wordly Uſe, but for the Eaſe of the Conſcience; ſo ſilent Men, for the ſame reaſon, come to the Knowledge of many things, while others rather diſcharge their Mind, than impart it. In ſhort, *Myſteries are due to the Silent*. Beſides, Nakedneſs is uncomely as well in the Mind as the Body: and not to be too open procures no ſmall Reverence to Mens Counſels and Actions. On the other hand, great *Talkers* are commonly vain and credulous: For he who talks what he knows, will alſo talk what he knows not. Let it therefore paſs for a Maxim, that a *Habit of Taciturnity is both a political and a moral Virtue*. Add to this, that a Man's Face ſhould not contradict his Tongue. For to betray ones ſelf by the Countenance or Geſture is a great Weakneſs; and a thing frequently more obſerved and credited than a Man's Words. *Viz.* Taciturnity.

For the *ſecond*, which is *Diſſimulation*; it often neceſſarily follows upon Taciturnity: So that to be ſecret, one muſt, in ſome degree, diſſemble. For Men are too cunning to permit, that any one ſhould preſerve an Indifference; without inclining the Balance on either ſide. They will ſo beſet a Man with ſubtile Queſtions, draw him on, and ſift him, that, without an abſurd Silence, he muſt ſhew an Inclination one way or other; or elſe they will conclude as much from his Silence, as if he had ſpoke. And for Equivocations and Ambiguities, they cannot hold out long. Whence no Man can be ſecret, without ſome degree of *Diſſimulation*; which is, as it were, the Verge of Secrecy. Diſſimulation.

5. But for the *third* Degree, which is *Simulation*, or *falſe Profeſſion*; I hold it more culpable, and leſs politick; unleſs it be in great and extraordi- *And* Simulation.

[f] This is a great Secret in *Civil Policy*; and the Moral of *Pluto's Helme*

ordinary Matters. Hence a conſtant Cuſtom of *falſe Profeſſion* is a Vice, ariſing either from a natural Fearfulneſs, or a Mind that labours under ſome great Defect: which abſolutely requiring to be diſguiſed, cauſes *Simulation* to be practiſed in other things alſo; that the Habit may be kept up.

The Advantages of Simulation and Diſſimulation

6. The Advantages of *Simulation* and *Diſſimulation* are chiefly three. The *firſt* is, to lay Oppoſition aſleep; and to ſurprize. For to publiſh ones Intentions is ſounding the Alarm to Oppoſers. The *ſecond* is, to ſecure an honourable Retreat; for to engage ones ſelf by an open Declaration, is to be wedged by the Dilemma of going through or being foiled. The *third* is, to diſcover the Deſigns of another: For he who divulges his own Deſigns will ſeldom be ſtopped; but rather urged to go on, whilſt the Hearer turns this freedom of Speech, to freedom of Thoughts. It is a ſhrewd Proverb of the *Spaniard*; *Tell a Lie, and find a Truth:* As if *Simulation* were the Key of Diſcovery.

Their Diſadvantages.

7. There are alſo three *Diſadvantages* to balance the former. For, (1.) *Simulation* and *Diſſimulation* commonly argue Timidity; which clips the Wings of Buſineſs. (2). They puzzle and perplex the Minds of many, who, perhaps, would otherwiſe co-operate: which makes a Man walk almoſt alone to his own Ends. But, (3.) the greateſt *Diſadvantage* is, that they deprive a Man of a principal Inſtrument of Action; *Truſt*. The beſt Compoſition is, to have the Reputation of *Veracity*; the Habit of *Taciturnity*; the ſeaſonable Uſe of *Diſſimulation*; and the Faculty of *Simulation*, when it is neceſſary[h].

ESSAY V. *Of* FRIENDSHIP.

Whether Love of Solitude be a Divine or Brutal Virtue.

1. IT were difficult to put more Truth and Falſhood together, in few Words, than in that Saying, *Whoever delights in Solitude is either a wild Beaſt, or a God.* For 'tis true, that a natural and ſecret Hatred of Society, has ſomewhat of the Savage: But falſe, that it ſhould have any Mark of the Divine Nature; except it proceed not from a Love of Retirement, but a Deſire to ſequeſter ones ſelf for the ſake of ſublimer Contemplations. But little do Men perceive what *Solitude* is; and how far it extends. For a Crowd is no Company: Mens Faces are but like Pictures in a Gallery; and Talk but a *tinkling Cymbal*; where there is no Love. This is intimated by the *Latin* Proverb, *Magna Civitas, Magna Solitudo*[i]. For in large Towns, Friends and Acquaintance are more diſperſed, and hold Converſation leſs than in ſmaller Neighbourhoods. We may go farther, and

[g] Both the *Latin* and the *Engliſh* are here ſomewhat perplexed, or ambiguous. The *Caſe* intended ſeems to be a Caſe of *Simulation*; or *falſe Profeſſion*; when one Perſon opens himſelf to another, ſuppoſing him his Friend; which Opinion the other countenances, till he has drawn out the *Secret*, and then turns it to his own Advantage.

[h] See the *Preliminaries* to the *De Augment. Scient.* §. III. and the *De Augmentis* it ſelf, §. XX. *Of* ETHICKS, or MORALITY.

[i] Great *Cities* are wide *Deſarts*.

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and truly assert, that it is a more miserable *Solitude*, to want true Friends: without which the World is but a Wilderness. And in this sense also of *Solitude*, whoever in his Nature and Affections is averse to *Friendship*, participates of the *Brute*.

The Advantages of Friendship; viz. easing the Mind.

2. A principal Advantage of *Friendship* is the ease and discharge of that Anxiety, and fullness of Heart, which Passions of all kinds induce. Those Diseases of the Body that proceed from Stoppage and Suffocation, are the most dangerous; and the case is much the same in Disorders of the Mind. Sarza is said to open the *Liver*; Steel the *Spleen*, &c. but nothing opens the Heart like a true Friend; to whom we may impart, in the way of *Civil Confession*, our Griefs, Joys, Fears, Hopes, Suspicions, Cares, Counsels, and whatever lies upon the Heart to oppress it. 'Tis strange how highly Monarchs prize this Fruit of Friendship; so as often to purchase it at the hazard of their Safety and Greatness. For Princes from the height of their Fortune, above that of their Subjects, cannot reap this Advantage, but by raising some Person to be, as it were, their Companion or Equal; which frequently has its Inconvenience. Modern Languages give such Persons the Name of *Favourites* or *Minions*; as if it were matter of Grace and Favour; but the *Roman* Title, *Participes Curarum*, expresses their true Use and Cause: for to have them *Partners in their Cares*, is that which ties the Knot. And this has been practised, not by weak and effeminate Princes only, but also by the wisest and most political; who, after the manner of private Persons, have often joined to themselves some of their Servants, under the common Name and Notion of *Friends*. That mystic Precept of *Pythagoras* is dark, but just; *Eat not the Heart*. Certainly, to give the thing a harsh Phrase, those who want Friends to open their Griefs to, are Canibals of their own *Hearts*. This communicating of ones self to a Friend, has two contrary Effects; for it doubles Joys, and halves Griefs: Since no Man imparts his Joys to a Friend, but rejoices the more; nor his Griefs, but grieves the less. For, as in *Bodies*, Union strengthens and cherishes all natural Actions; but weakens and blunts all violent Impressions; the case is the same in *Minds*.

Improving the Understanding.

3. The *second* Advantage of *Friendship* regards the Understanding; as the former does the Affections: For as Friendship makes Serenity in the Affections; so it makes Day-light in the Understanding. And this holds true, not only of *faithful Counsel*; but whoever has his Mind clouded, or overcharged with Thought, his Understanding clears up, and makes, as it were, a fair Day, by communicating freely, and discoursing with another: For, by this means, he revolves his Thoughts more easily, marshals them better, sees how they look when turn'd into Words, and grows wiser, by an Hour's Conversation, than by a Day's Meditation. It was justly said by *Themistocles*, that *Speech is like Tapestry unfolded*, when the Imagery appears distinct; but *Thoughts, like Tapestry in the Bale*, where the Figures are rolled up together. Nor is this second Advantage of Friendship, *viz.* the opening of the Understanding, restrained to such Friends,

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as are able to adviſe; but even without this, a Man thus learns of himſelf, brings his own Thoughts to light, and whets his Wit as againſt a Stone, which has itſelf no Edge. In ſhort, a Man had better impart himſelf to a *Statue*, or a *Picture*, than ſuffer his Thoughts to ſmother, in Silence. But to compleat this ſecond Advantage of Friendſhip, *faithful Counſel* is likewiſe required from a Friend. *Heraclitus* ſaid well, *Dry Light is the beſt*. And, certainly, the Light that a Man receives in the way of Advice from another, is drier and purer than what comes from his own Underſtanding and Judgment; which is ever infuſed and drenched in his own Affections. Whence the Advice of a Friend differs as much from a Man's own Opinion, as the Advice of a Friend from that of a Flatterer: For there is no greater Flatterer than a Man to himſelf; and no ſurer Remedy againſt Self-Flattery, than the Liberty of a Friend.

Securing good Counſel.

This Counſel of two kinds, regarding, (1.) Morality.

4. Counſel is of two kinds; and regards either *Morality*, or *Buſineſs*. For the *firſt*; the beſt Preſervative of the Mind, is the faithful Admonition of a Friend. Strict Self-Examination is ſometimes too piercing and corroſive a Remedy: Reading Books of Morality, is a little flat and dead: Obſerving our own Faults in others, is ſometimes unſuitable to our Caſe: The beſt Medicine, for operation and taking, is friendly Admonition. 'Tis ſtrange, what groſs Errors and Abſurdities are committed, eſpecially by the Great, for want of a friendly Admoniſher; to the diſadvantage both of their Fame and Fortune. For they are as Men, *that behold their Face in a Glaſs, and preſently forget their Features*[k].

And (2.) Buſineſs.

5. As for *Buſineſs*; 'tis an ancient Saying, that *two Eyes ſee more than one*. 'Tis alſo certain, that a By-ſtander often ſees more of the Game than a Player; and that a *Muſquet is fired truer upon a Reſt, than upon the Arm*; tho ſome lofty Natures think themſelves all in all. But this is certain, whatever may be alledged to the contrary, that *Counſel is what directs and ſettles Buſineſs*. But if a Man think to take Counſel piece-meal, and to aſk Advice of one, in this Buſineſs, and of another in that; it may be better than not to aſk Advice at all; but he runs two Riſques; *viz.* (1.) that of not being faithfully adviſed: For 'tis rare, unleſs from a perfect and entire Friend, to receive Advice that ſhall not be diſtorted to the Ends of him who gives it: And (2.) that the Advice he thus receives from different Perſons, tho ever ſo well intended, ſhall often prove pernicious, or a Mixture of Remedy and Inconvenience; like conſulting a Phyſician verſed in the Cure of the Diſeaſe, but unacquainted with the Conſtitution; who may therefore effect a preſent Cure, and injure the Health in ſome other reſpect. But a Friend fully acquainted with our Caſe, will be cautious of falling upon farther Inconveniences, whilſt he promotes the preſent Buſineſs. Depend not, therefore, upon *ſcatter'd Counſels*; for they will rather diſtract and miſlead, than direct and ſettle.

The third Advantage of Friendſhip; viz. Aſſiſtance.

6. After theſe two noble Advantages of *Friendſhip*, *viz.* Peace in the Affections, and ſupport of the Judgment, comes that which is like the Pome-

[k] See the *Eſſay upon Counſel, or Advice.*

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Pomegranate, full of Kernels; *viz. Assistance, and bearing a Part in all Actions and Occasions.* And here the most expeditious way of justly representing the numerous Uses of Friendship, were to enquire how many things there are, which a Man cannot well do for himself; whence it will appear but a moderate Saying of the Ancients, *that a Friend is a second Self:* For to judge truly, a Friend may be more than ones self. Men are mortal, and often die without finishing what they principally affected; as the bestowing of a Child; the finishing of a Work, and the like. If, therefore, a Man has a true Friend, he may rest secure, the Care of these things will be continued after him: So that he has, as it were, *two Lives in his Desires.* Man is confined to a Body, and that Body confined to a Place; but where Friendship is, all the Offices of Life are performable, either by himself or his Deputy; that is, his Friend. How many things are there which a Man cannot, with any Grace, or Decency, say or do for himself? A Man can scarce alledge his own Merits with Modesty; much less extol them: He cannot sometimes submit to supplicate, petition, *&c.* But all these things are graceful in the Mouth of a Friend. So again, a Man stands in many Relations, which he cannot divest himself of. He cannot speak to his Son, but as a Father; to his Wife, but as a Husband; to his Enemy, but with Reserve: Whereas a Friend may speak to them all, as the Case requires, without the same Respect of Persons. It were needless to enumerate all the things of this kind. We have given the *Rule:* And when a Man cannot act his Part in his own Person, and has no Friend to appear for him, 'tis the better way to quit the Stage.

ESSAY VI. *Of the* MORAL DUTY *of a* JUDGE.

1. JUDGES should remember, that their Office is to interpret the Law, not to make it: otherwise, their Authority would be like that claimed by the Church of *Rome*; which, under pretence of interpreting Scripture, sometimes adds, alters, pronounces what is not found, and, under the colour of *Antiquity*, introduces *Novelty*. Judges should rather be learned than ingenious; reverend than affable; advised than confident. Above all things, Integrity is their Portion and proper Virtue. *Cursed*, says the Law, *is he that removeth the ancient Land-Mark.* Certainly, the Mislayer of a *Mark-Stone* is to blame: but the unjust Judge is a capital Remover of Land-Marks, when he determines amiss of Lands and Properties. One unjust Sentence is more pernicious than many bad Examples: For these only corrupt the Stream; but that the Fountain. So *Solomon* says, *a righteous man falling before the wicked, is as a troubled Fountain, and a corrupt Spring.* *The general Duty of a Judge.*

2. The Office of a Judge may relate, (1.) *to the Parties*; (2.) *the Pleaders*; (3.) *the Clerks and inferior Officers*; and (4.) *to the Sovereign or State.* *His Office divided, as it relates to the contending Parties, or Offenders.*

First, for the *Parties*. *There are those*, says the Scripture, *that turn judgment into wormwood*; and surely there are those that turn it into *Vinegar:* For

Injuſtice makes it bitter, and Delays make it ſour. The principal *Duty* of a Judge, is to ſuppreſs Force and Fraud; the former whereof is the more pernicious when open; the latter, when cloſe and diſguiſed. Add to this, that *contentious Suits* ſhould be quickly ejected, as the *Surfeit of Courts*. A Judge ſhould prepare his Way to a juſt Sentence, after the Example of God, by *raiſing Valleys*, and *levelling Hills*. So when a high hand appears on either ſide, by a virulent Proſecution, Stratagems, Combination, Power, great Patronage, Diſparity of Counſel, *&c.* the Virtue of a Judge appears in bringing all to an Equality; that he may found his Judgment as upon level Ground.

3. Violent Purging forces away Blood; and when the Wine-preſs is hard wrought, it yields a harſh Juice, that taſtes of the Stone. Judges ſhould therefore avoid hard Conſtructions, and ſtrain'd Inferences; for there is no worſe Torture than the Law upon the Rack. Eſpecially in *penal Laws*, let them be careful, that thoſe meant for Terror, be not turned into Rigour; and bring upon the People that Shower of which the Scripture ſays, *it ſhall rain Snares upon them:* For penal Laws, executed in their Rigour, are like a *Shower of Snares* upon a People. Let ſuch Laws, therefore, if they have ſlept long, or are grown unſuitable to the preſent Time, be, by prudent Judges, reſtrained in the Execution. A Judge muſt regard Times as well as Things. Judges, in capital Cauſes, ſhould, as far as the Law allows, *in the midſt of judgment remember mercy*; and caſt a ſevere Eye upon the Offence, but an Eye of Mercy upon the Offender.

(2) *To the Advocates or Council.*

4. *Secondly*, for the *Advocates* or Pleaders: Patience and Gravity in hearing Cauſes is an eſſential Part of Juſtice; and a loquacious Judge is no well-tun'd Cymbal. 'Tis not commendable in a Judge over-haſtily to ſeize what might in due time come better from the Council; or to ſhew a quickneſs of Thought in cutting Evidence and Pleadings too ſhort; or to anticipate Information, even by pertinent Queſtions. The Office of a Judge upon the Bench, is (1.) to direct the Courſe of the Evidence; (2.) to moderate the Length, Repetition, or Impertinence of Speeches in the Council, and Witneſſes; (3.) to ſum up, ſelect, and compare together the material Points of the Evidence; and (4.) to give Sentence. Whatever goes beyond this, is too much; and proceeds either from Oſtentation, fondneſs for Speaking, impatience of Hearing, weakneſs of Memory, or want of ſedate and equable Attention. 'Tis ſtrange to obſerve how frequently the Boldneſs of Advocates prevails with the Judge; who is to imitate God, whoſe Seat he holds, in curbing the preſumptuous, and erecting the humble. But 'tis ſtill ſtranger, that Judges ſhould have manifeſt Favourites among the Council: For this muſt needs enlarge ſuch Councils Fees, and give ſuſpicion of Corruption, and indirect ways of coming at the Judge. When Cauſes are judiciouſly and fairly pleaded, ſome Commendation and Notice is due from the *Judge* to the *Advocate*; eſpecially on the loſing ſide: for this both keeps up the Client's good Opinion of his Council, and renders him leſs conceited of his Cauſe. There is likewiſe due to the Publick a modeſt Reprehenſion of Advocates; where there is crafty

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crafty Inſtruction, groſs Neglect, ſlight Information, indecent Preſſing, or a too bold Defence. And let not the Council at the Bar interrupt the Judge; nor artfully bring on a new Pleading of the Cauſe after Sentence is given. On the other hand, let not the Judge meet the *Cauſe* half way; nor give occaſion for the Client to complain that his Council and Witneſſes were not heard.

(3) *To the Clerks and Officers.*

5. *Thirdly, for Clerks and Officers:* The Seat of Juſtice is ſacred; therefore not only the *Bench*, but the Ranges, and Precincts thereof, ſhould be without Scandal and Corruption. *For as grapes are not gathered of thorns, nor figs of thiſtles*; ſo neither can Juſtice yield a ſweet Fruit among the Briars and Brambles of catching and rapacious Clerks and Officers. There are four pernicious Attendants of Courts; *viz.* (1.) *Sowers of contentious Suits*; who make a fat Court, and a lean People. (2.) *Sticklers for the Juriſdiction of Courts*; who, not like Friends as they would ſeem, but Paraſites of the Court, ſwell her Pride for their own Advantage. (3.) *Perverters of Juſtice*; who may be accounted the *left hands* of Courts, and are Perſons full of Turns, Shifts, and Devices; whereby they pervert the plain and direct Courſes of Courts, and bring Juſtice into oblique crooked Ways and Labyrinths; and (4.) *Rapacious Exactors*; who juſtify the common compariſon made of Courts to a Bramble Buſh; whereto the Sheep flying for ſhelter in bad Weather, leave part of their Fleece behind them. On the other ſide; a veteran Clerk, verſed in Precedents, exact in Regiſtring, and diligent in the Buſineſs of the Court, is an excellent Finger of a Court; and often points out the Way to the Judge himſelf.

(4.) *To Sovereign or State.*

6. Fourthly, *for the Sovereign or State:* Judges ought, above all things, to remember the Concluſion of the *Roman twelve Tables, Salus populi ſuprema lex*[k]; and that *Laws*, unleſs in order to that End, are captious things; and Oracles ill inſpired. 'Tis therefore happy for the People, when Kings or States frequently conſult with Judges; and again, when Judges often conſult with Kings or States: the one, when matter of Law ariſes in buſineſs of State; the other, when State-Conſiderations ariſe in matter of Law. For it often happens, that a Caſe of *Meum* and *Tuum*, may in its Conſequence extend to Reaſons of State. By extending to Reaſons of State, I underſtand not only what regards the Rights of the Crown; but alſo whatever may introduce a dangerous Innovation, an unſafe Precedent, or manifeſtly oppreſs a great number of People. And let no weak Judgment imagine, that juſt Laws and true Policy, have any Oppoſition: For they are like the Spirits and Nerves; the one moves within the other. Let Judges remember, that *Solomon*'s Throne was on both ſides ſupported by Lions: let them be Lions, but Lions under the Throne; and cautious of infringing or oppoſing any part of the Royal Prerogative. To conclude; let not Judges be ſo ignorant of their own Right and Prerogative, as to think themſelves denied a principal part of their Office; *viz.* a ſound and

[k] *The Good of the People is the ſupreme Law.*

[l] See more upon this Subject in the *De Augmentis Scientiar.* Sect. XX. and again in the Author's *Speeches.* SUPPLEMENT IV.

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prudent Use and Application of the Law: For they may remember that the *Apostle* says of a greater Law than the human; *We know that the Law is good, if a man use it lawfully*[l].

ESSAY VII. *Of* FAME, *or* RUMOURS.

The Poetical Description and Origin of Fame.

1. THE Poets make *Fame* a Monster: They describe her on one side with great Finery and Elegance; but sententiously on the other. They say, how many Feathers she has, so many Eyes lie underneath; so many Tongues; so many Voices; so many Ears. This is a Flourish, but followed with excellent Metaphors; as that she gathers Strength in going; that she walks upon the Ground, yet hides her Head in the Clouds; that in the day-time she sits upon a Watch-Tower, and chiefly flies by Night; that she mixes things done, with things not done; and that she is a Terror to great Cities. Above all, they tell us, that the Giants, who made War against *Jupiter*, being destroyed by him; their Mother, the Earth, incensed thereat, brought forth Fame, by way of Revenge. For Rebellions, here denoted by the Giants, and seditious Fames, and Libels, are Brothers and Sisters; Male and Female[m].

The Subject of Fame important in Politicks.

2. Now to tame this Monster, bring her to feed at hand, govern her, and flie her at other ravenous Fowl, were worth the Endeavour. To speak seriously, and without a Metaphor, there is not in all Politicks a Subject less handled, than this of Fame. It should therefore be enquired; (1.) what are false Fames; (2.) what true Fames; (3.) how they may best be discovered; (4.) how sown and rais'd; (5.) how spread and multiplied; and (6.) how check'd and laid dead[n].

The great Effects of false Fames.

3. *Fame* is so powerful, that there is scarce any great Action wherein it has not some considerable Share; especially in War. *Mucianus* ruin'd *Vitellius* by a Fame he had spread, that *Vitellius* purposed to remove the Legions of *Syria* into *Germany*; and the Legions of *Germany* into *Syria*; whereby the Legions of *Syria* were violently inflamed. *Julius Cæsar* took *Pompey* unprovided, and laid asleep his Industry and Preparations, by a Fame he cunningly gave out, that *Cæsar*'s own Soldiers loved him not; and being wearied with the Wars, and laden with the Spoils of *Gaul*, would forsake him as soon as he came into *Italy*. *Livia* settled all things for the Succession of her Son *Tiberius*, by continually giving out, that her Husband *Augustus* was upon the Recovery. And 'tis usual with the *Bashaws* to conceal the Death of the *Grand Signior* from the Janizaries; to prevent their sacking of *Constantinople*, &c. *Themistocles* made *Xerxes* post out of *Greece*, by spreading a Rumour, that the *Grecians* purposed to break down his Bridge of Ships, which he had made across the *Hellespont*. There are

[l] See more upon this Subject in the *De Augment. Scientiar.* Sect. XX. and again in the Author's *Speeches.* SUPPLEMENT IV.

[m] See the *Fable of Perseus*, explained in the *De Augment. Scientiar.* Sect. II.

[n] Only the first of these Heads is here touch'd upon: The Prosecution of the rest being, perhaps, purposely omitted; that it might not lay some *Secrets of Government* too open. See the *De Augmem. Scientiar.* Sect. XXVI.

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are thouſands of Examples to the ſame purpoſe. Let all wiſe Governors therefore have as careful a watch over Fames and Rumours, as they have over Actions and Deſigns themſelves [o].

ESSAY VIII. *Of* VAIN-GLORY, *or* OSTENTATION.

1. IT was elegantly feigned of *Æſop*, that a Fly ſitting upon the Axle-tree of a Chariot, cry'd out to herſelf, *What a Duſt do I raiſe?* For thus certain vain and empty Perſons, if they touch but a Buſineſs, imagine themſelves prime Movers; tho the Motion be either ſpontaneous, or excited by greater Means. The vain-glorious are always quarelſome; for Oſtentation is grounded on Compariſon; and Men of this Caſt muſt needs be violent, in order to effectuate their Boaſtings: but they cannot be ſilent, and therefore commonly effect nothing; according to the French Proverb, *Beaucoup de Bruit peu de Fruit* [p]. *The Vanity of Boaſters.*

2. Such Men, however, may ſometimes have their Uſe in Life: For where a Reputation is to be raiſed, or an Opinion to be ſpread, whether of Virtue or Power, they make excellent Trumpeters. Again, Lies on both ſides may be ſometimes highly ſerviceable; as when an Agent, to engage two Princes in a War againſt a third, ſeverally exaggerates the Forces of both; or as when he who goes between two, raiſes his own Credit with both, by pretending greater Power than he has with either. In theſe and the like Caſes it often happens, that ſomewhat is produced out of nothing: for Lies are ſufficient to cauſe Opinion; and Opinion brings on Action and Subſtance [q]. *The Uſe of the Vain-glorious, in civil Life.*

3. In Commanders alſo, and Gentlemen of the Sword, *Vain-glory* is of uſe: For as Iron ſharpens Iron, ſo Soldiers ſharpen and excite each others Courage by Boaſting and Oſtentation. Again, ſome Intermixture of vain-glorious Tempers puts Life into Buſineſs; and makes a fit Compoſition in grand Enterprizes, and hazardous Undertakings. For Men of ſolid and ſober Natures have more of the Ballaſt than of the Sail. *In martial Men.*

4. For Learning; the Flight of its Reputation will be ſlow, without ſome Feathers of Oſtentation. They who write Books upon the *Contempt of Glory*, ſtill add their Names in the Title. Even *Ariſtotle*, *Socrates* and *Galen*, were Boaſters [r]. And, certainly, *Vain-glory* greatly contributes to ſpread a Man's Fame: and even Virtue is leſs beholden to human Nature for her Character, than to herſelf. The Fame of *Cicero*, *Seneca*, and *Pliny*, would ſcarce have continued till now, at leaſt not ſo lively, had it not been joined with ſome degree of Vanity and Oſtentation in themſelves: For *In the learned.*

[o] In order to ſupply the Deficiency of this Eſſay; ſee the *De Augment. Scientiar.* Sect. XXVI. and the third Section of the *Sapientia Veterum.*

[p] Great Cry and little Wool.

[q] Here is a Foundation laid for the *Doctrine of Lies*; a Subject little touch'd upon; tho of great Importance in *Social*, *Civil* and *Political* Life.

[r] See SUPPLEMENT X.

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For Oſtentation is like Varniſh, that makes Wood not only ſhine, but laſt.

The prudent Ways of ſhewing ones ſelf to Advantage.

5. By *Vain-glory* and *Oſtentation* I do not here underſtand the Talent which *Tacitus* aſſigns to *Mucianus*, of ſhewing all our Words and Actions to Advantage; which is not the Effect of Vanity, but of Art and Prudence, accompanied with a certain Greatneſs: And in the Perſons who ſeem by Nature form'd thereto, this is not only a graceful, but a winning and happy Accompliſhment. For genteel Excuſes, prudent Conceſſions, and even Modeſty itſelf well governed, are but *Arts of Oſtentation*. And among theſe Arts, there is none more ſucceſsful than that mentioned by *Pliny*; viz. *liberally to praiſe thoſe Excellencies in others, for which ourſelves are eminent*[r].

Summary of the Whole.

5. The *vain-glorious* are the Scorn of wiſe Men; the Admiration of Fools; the Prey of Paraſites; and the Slaves of their own Vanity[s].

ESSAY IX. *Of* PRAISE.

Praiſe of the Vulgar often falſe.

1. PRAISE is the Reflection of Virtue; and, like Light, participates of the reflecting Body. If it proceed from the Herd, it is commonly falſe; and rather attends the Vain, than the Virtuous: for the Vulgar have no feeling of many eminent Virtues. The leſſer ones extort their Praiſe; the middle ones raiſe their Wonder; but of the higheſt they are quite inſenſible. Appearances of Virtues ſtrike them moſt. Hence Fame is like a River, that bears up things light and tumid; but ſinks thoſe that are ponderous and ſolid. But if Perſons of Judgment and Worth concur with the Vulgar; it is then *that a good Name becomes as precious Ointment*; diffuſes itſelf around; and long continues in Vigour: For the Odours of Ointments are more durable than the Odours of Flowers.

The falſe Colours of Praiſe.

2. Praiſe has ſo many falſe Colours, that a Man may juſtly ſuſpect it. Some Praiſes proceed merely from Flattery. The common Flatterer has his general Complements, that ſerve every Man alike; the cunning Flatterer will exactly copy that arch Flatterer, ones ſelf; and lay his Praiſe where ourſelves believe it due: but the impudent Flatterer will bear you out, that your very Defects are the Virtues which both himſelf and you are conſcious you have not.

The Kinds of Praiſe.

3. Some Praiſes proceed from Good-will, join'd with Reſpect. This is a Form of Civility due to Princes and great Perſonages; which, by painting them well, humbly ſhews them what they ſhould be. Some Men are praiſed maliciouſly, with a Deſign of raiſing Envy and Jealouſy againſt them: whence it was proverbial among the *Grecians*, that he who was praiſed to his Diſadvantage, would have a Pimple riſe upon his Noſe; as we ſay, a Bliſter will riſe upon the Tongue that tells a Lie.

4. Genteel

[r] See the *De Augmentis Scientiarum*. Sect. XXV.

[s] They are the Slaves of their own Vanity, in thinking themſelves ſometimes obliged to attempt what they have ſo often boaſted.

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4. Genteel and moderate Praiſe, ſeaſonably beſtowed, has a great Effect. *Solomon* ſays, *he that praiſes his friend aloud, riſing early, it ſhall be to him no better than a Curſe*[v]. To magnify either Man or Matter above meaſure, ſtirs up Contradiction, procures Envy, and expoſes to Contempt. *The good Effect of ſeaſonable and moderate Praiſe.*

5. To praiſe ones ſelf is indecent; unleſs in very extraordinary Caſes: but a Man may praiſe his Office, his Profeſſion, or his Studies, with a tolerable Grace, and ſome kind of Magnanimity. St. *Paul*, when he boaſts of himſelf, often interlaces, *I ſpeak as a fool*; but of his Calling he ſays, *I will magnify my Apoſtleſhip*. *How Praiſes may be graceful.*

ESSAY X. *Of* HONOUR *and* REPUTATION.

1. THE juſt Means of acquiring Honour and Reputation, is for a Man to diſplay his own Virtues and Abilities to advantage: For thoſe who court and hunt after Fame in their Actions, are commonly much talk'd of, but inwardly little admired. And thoſe again who cloud their Virtue in ſhewing it; are not eſteemed equal to their Merit. *The true Means of procuring Honour.*

2. For a Man to undertake and execute a Matter that was never attempted before, or elſe attempted and deſerted; or that has been effected, but not in the beſt and happieſt manner; procures him more Honour, than it would to accompliſh a Matter of much greater Difficulty or Moment, wherein he is but a Follower. And if a Man ſo blend his Actions, as in ſome one or other of them to pleaſe all Factions, the Conſort will be the fuller. *The popular Means.*

3. He is an ill Huſband of his Honour, who enters upon any Action, the failing wherein may diſcredit him more than the carrying it through could grace him. Honour acquired by outſhining another has the quickeſt Reflection; like a Diamond cut with Faſcets[w]. Therefore let a Man endeavour to excel Competitors in Honour, by out-ſhooting them in their own Bow. Diſcreet Followers and Familiars contribute much to Reputation. Envy, that Canker of Honour, is beſt diſtinguiſhed by appearing to ſeek Merit rather than Fame; and by attributing Succeſſes rather to Providence and Felicity, than to a Man's own Virtue or Policy[x]. *Directions for acquiring Honour.*

4. The Degrees of ſovereign Honour are thus juſtly marſhall'd. Firſt come Founders of Empires; ſuch as *Romulus*, *Cyrus*, *Cæſar*, *Ottoman*, *Iſmael*. In the *ſecond* place come *Legiſlators*; who are alſo called *ſecond Founders*, or perpetual Princes; becauſe they govern by their Laws, after their own Deceaſe: ſuch were *Lycurgus*, *Solon*, *Juſtinian*, *Edgar*, &c. In the *third* Place come *Deliverers*, or Preſervers of their Country; ſuch as put an End to long Civil Wars, or free their Countries from Tyrants, or Servitude to Strangers; as *Auguſtus Cæſar*, *Veſpaſian*, *Aurelian*, *Henry* the Seventh *The Degrees of ſupreme Honour.*

[v] See this Aphoriſm explained in the *De Augmentis Scientiar.* Sect. XXIV. 36.
[w] *i. e.* Brillant-cut.
[x] See *De Augmentis Scientiar.* Sect. XXV.

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Seventh of *England*, &c. In the *fourth* Place come *Defenders*, or *Enlargers* of *Empire*; such as in honourable Wars extend their Territories, or make a noble Defence against Invaders. And in the last Place, come the *Fathers* of their *Country*; who reign justly, and make their People happy.

The Degrees of inferior Honours.

5. Degrees of Honour in Subjects are first, *Partakers of the Cares of Princes*; or those on whom Princes discharge the Weight of their Affairs. The next are great *Leaders*; such as supply the Places of Kings, and perform capital Service in War. The *third* are such *Favourites* as prove a Solace to the Sovereign; and harmless to the People. And the *fourth*, such as hold great Offices under Princes; and execute them with Prudence and Justness.

A rare Degree of Honour.

6. There is likewise an Honour, which, tho rare, may be reckon'd among the greatest; *viz.* of such as devote themselves to Death or Danger, for the Good of their Country; as did *Regulus*, and the two *Decii*.

ESSAY XI. *Of* ADVERSITY.

The lofty Saying of Seneca *upon Adversity.*

1. IT was a lofty Saying of *Seneca*, and in the *Stoical* Manner, that *the Advantages of Prosperity are to be wish'd; but the Advantages of Adversity to be admired.* Certainly, if it be justly said, that Miracles are Conquests over Nature, these appear most in Adversity. There is still a sublimer Saying of the same Author, and too sublime for a Heathen; *viz. That it is true Greatness, to have the Frailty of a Man, and the Security of a God.* This Saying might have suited better with Poetry; where Hyperboles are more allowable. And indeed the Poets have been busy with it; for 'tis in effect the thing figured out in that strange Fiction of the ancient Poets, which seems to contain a *Christian* Mystery; *viz.* that *Hercules*, when he went to unbind *Prometheus*, by whom human Nature is represented, sailed the length of the great Ocean in an earthen Pitcher; thus lively describing Christian Resolution, that sails in the frail Barque of the Flesh thro the Waves of the World[a].

Prosperity and Adversity compared.

2. To speak more moderately; the principal Virtue of Prosperity is Temperance; and of Adversity, Fortitude; which in Morality is allowed the more heroical Virtue. Prosperity is the Blessing of the *Old Testament*, Adversity of the *New*; which is greater, and affords a clearer Revelation of the Divine Favour. Yet even in the Old Testament we find *David*'s Harp play'd as many Dirges as Carols: And the Pencil of the Holy Ghost has more fully described the Afflictions of *Job*, than the Felicities of *Solomon*.

A Joy in Adversity.

3. Prosperity has its Fears and Distastes; Adversity its Hopes and Comforts. In Embroidery we find it more pleasing to have a lively Work upon a solemn Ground, than a dark Work upon a light Ground. Whence we

[a] See the Fable of *Prometheus*, explained in the *Sapientia Veterum*.

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we may judge of the Pleaſure of the Heart, by the Pleaſure of the Eye. Certainly, Virtue is like ſome Perfumes, that are moſt fragrant when burnt, or bruiſed: for Proſperity beſt diſcovers Vice; but Adverſity Virtue.

ESSAY XII. *Of the* VICISSITUDE OF THINGS.

The Inſtability of things on Earth.

1. SOLOMON ſays, *there is no new thing under the Sun:* Therefore, as *Plato* imagin'd, that all Knowledge is but Remembrance; ſo *Solomon* pronounces, that all Novelty is but Oblivion. Whence we may ſee, that the River *Lethe* runs as well above Ground as below. A certain abſtruſe and obſcure *Aſtrologer* ſays, were it not for two things, that are conſtant; *viz.* the fixed Stars in their ſituation, and the diurnal Motion in its return, no Individual would laſt a Moment. And certainly Matter is in a perpetual Flux, never at a ſtay.

The Cauſes of Oblivion.

2. The great Winding-Sheets that bury all things in Oblivion, are *Deluges* and *Earthquakes*. As for *Conflagrations*, and great *Droughts*, they do not totally diſpeople or deſtroy. *Phaeton* drove the Sun's Chariot but a Day: And the three years Drought, in the time of *Elias*, was but particular, and left People alive. The Devaſtations by Lightning, ſo frequent in the *Weſt-Indies*, are but of narrow extent: And Peſtilences do not ſweep away whole Nations.

Deluges and Earthquakes leave a Remnant of People behind.

3. In the Deſtructions by *Deluges* and *Earthquakes* the Remnant of People are commonly ignorant and mountainous; ſo that they can give no account of the time paſt. Whence the Oblivion is the ſame as if no Inhabitants had been left[a]. If we thoroughly conſider the Natives of the *Weſt-Indies*, 'tis highly probable they are a newer, or a younger People, than the Inhabitants of the old World. And it ſhould ſeem that the Deſtruction which accidentally befel them, came not by Earthquakes, but rather by a *particular Deluge:* for Earthquakes are very rare in thoſe Parts; but they have ſuch vaſt Rivers, that thoſe of *Aſia*, *Africa*, and *Europe*, appear but Brooks to them. Their *Andes* likewiſe are exceeding high Mountains; whereby 'tis likely ſome Remnants of Men were ſaved from ſuch a particular Deluge[b].

Changes in the Heavens.

4. The Viciſſitudes or Changes in the celeſtial Globe, are not much to our preſent Purpoſe. *Comets*, doubtleſs, have ſome Influence upon the Groſs and Maſs of things: but they are rather gazed at and waited upon in their Journey, than prudently obſerved in their reſpective and comparative Effects: For example; what kind of Comet for Magnitude, Colour, Radiation, Situation in the Heavens, or Duration, produces what kind of Effects[c]?

[a] This is a Conſideration not to be ſlightly paſſed over by thoſe who would enquire into the Cauſe of the preſent Face of Things on the Globe.

[b] See this Matter farther proſecuted in the *Author's New Atlantis*, Sect. I. 26, 27.

[c] See the Author's *Specimen of Animated Aſtronomy*, SUPPLEMENT IX.

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Viciſſitudes of Years. 5. They ſay 'tis obſerved in the *Low Countries*, that once in thirty-five years, the ſame kind of Weather and Series of Years come about again; as hard Froſts, Inundations, Droughts, warm Winters, *&c.* and this Revolution they call the *Prime*. 'Tis a thing I the rather mention, becauſe by computing backwards, I have found ſome kind of Correſpondence.

The Viciſſitudes of Sects and Religions. 6. The greateſt Viciſſitude of things among Men, is that of *Sects* and *Religions*; which are the Orbs that rule in Mens Minds the moſt. True Religion is built upon a Rock; the reſt are toſſed upon the Waves of Time. When a received Religion is rent by Diſcords; the Holineſs of its Profeſſors decayed; their Lives grown ſcandalous; and the Times ignorant and barbarous, ſuſpect the Introduction of a new Sect; eſpecially if any wild paradoxical Spirit ſhould now ariſe to eſpouſe it: All which concurred when *Mahomet* publiſhed his Law.

Two Requiſites to the Introduction of a new Religion. 7. No *new Sect* can ſpread, unleſs, (1.) it oppoſe or ſubvert the eſtabliſhed Authority; which is an extremely popular thing; and (2.) opens the Door to Luxury and Pleaſures. But for ſpeculative Hereſies; ſuch as the *Arian* of old, and the *Arminian* of late, tho they operate ſtrangely upon Mens Minds, yet they produce no great Alterations in States; unleſs by the favour of civil Occaſions.

Three Ways of introducing new Sects. 8. There are three Ways of planting new Sects; *viz.* (1.) by *Miracles*; (2.) *Eloquence*; and (3.) the *Sword*. As for Martyrdoms, I reckon them among Miracles; becauſe they ſeem to exceed the Strength of human Nature; and underſtand the like of ſuperlative Holineſs of Life.

The Ways of ſuppreſſing new Sects. 9. There is no better Way to ſtop the Riſe of new Sects and Schiſms, than to reform Abuſes; compound the leſſer Differences; proceed mildly from the firſt; refrain from ſanguinary Perſecutions; and rather to ſoften and win the principal Leaders, by gracing and advancing them, than to enrage them by Violence and Bitterneſs.

The Viciſſitudes of Wars. 10. The *Viciſſitudes of Wars* are numerous; but chiefly turn upon three Points; *viz.* (1.) the *Seat of War*; (2.) the *kinds of Arms*; and (3.) the *Diſcipline uſed*. (1.) Wars ſeem'd anciently to move chiefly from Eaſt to Weſt: For the *Perſians*, *Aſſyrians*, *Arabians*, and *Tartars*, who were the Invaders, are all Eaſtern People. The *Gauls* indeed were Weſtern: but we read only of two Incurſions they made; the one upon *Gallo-Græcia*; the other upon the *Romans*: And as the Eaſt and Weſt are no fixed Points in the Heavens; ſo of the Wars from the Eaſt or Weſt, we have no certain Obſervation: But the North and South are fix'd by Nature; and it has been ſeldom or never ſeen, that the far Southern People invaded the Northern; but the contrary. Whence it appears, that the Northern Tract of the World is naturally the more martial: Whether this be owing to the Stars of that Hemiſphere, or to the vaſt Continents upon the North; or to the Coldneſs of thoſe Parts, which naturally renders the Body hardy, and the Heart courageous.

The Cauſes of Wars; viz. Diſſolution of States. 11. Upon the breaking and ſhivering of a great Empire, Wars are certainly to be expected: For great Empires, while they flouriſh, enervate the native Forces of their Provinces, by relying wholly upon their own Soldiers

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Soldiers at home; ſo that when theſe fail, all goes to Ruin; and the Empire becomes a Prey to other Nations. Thus it happened in the Declenſion of the *Roman* Empire, and the Empire of *Almaign*, after *Charles* the Great; every Bird taking its own Feathers.

12. On the other hand, great Enlargements and Unions of Kingdoms occaſion Wars. For when a State ſwells with Power, it is like a River ſwelling with the Land-Waters, and threatening an Inundation; as appeared in the Empires of *Rome*, *Turkey*, *Spain*, &c. *Their Enlargement.*

13. When the World abounds with civilized Nations, that will not uſually marry, or beget Children, whilſt unprovided of the Means of living; there is no danger of Inundations or Tranſmigrations of People: But when vaſt ſhoals of Men continue populating, without any Proviſion for their Maintenance; they muſt of neceſſity, once in an Age or two, diſcharge a Portion of their Natives upon other Nations. This the ancient Northern People uſually did by Lot: which determined what part ſhould continue at home, and what remove. *A Want of providing for the Natives.*

14. When a military State grows ſoft and effeminate, War certainly follows. For ſuch States commonly grow rich in the time of their degenerating; whence the Prey invites, and their Decay in Valour encourages an Invaſion upon them. *Military States growing effeminate.*

15. *Weapons*, *Arms*, or *Artillery*, tho they hardly fall under Rule and Obſervation; yet even theſe have their Returns and Viciſſitudes. For Braſs Cannon was known in the Time of *Alexander* the Great, at the City of *Oxydraces* in *India*; being what the *Macedonians* call'd Thunder, Lightning, and Magical Operations. And the *Chineſe* have had the Uſe of Ordnance and Gunpowder above two thouſand Years. *The Revolutions of Artillery and Fire-Arms.*

16. The Properties and Improvements of Arms are, *firſt* that of reaching to a great Diſtance: for this out-runs Danger; as in Ordnance and Muſkets. *Secondly*, the Strength of the Percuſſion; wherein likewiſe Ordnance exceed all *Arietations*, and ancient Inventions. The *third* is, Commodiouſneſs of Uſe, as that they may ſerve in all Weathers; that the Carriage be light, manageable, *&c.* *The Properties of Arms.*

17. (3.) As for Military Conduct and Diſcipline; at the firſt, Men principally relied upon Number, and truſted to downright Force and Valour; frequently appointing pitch'd Battles, and ſo trying it out upon even Terms. They were then unſkill'd in drawing up and marſhalling their Armies: Afterwards they depended rather upon competent, than vaſt ones. They now took the Advantages of Place, practiſed Feints, Stratagems, *&c.* and grew more ſkilful in preparing for Battle. *The Progreſs of Military Conduct, and Diſcipline.*

18. In the Youth of a State *Arms* flouriſh; in the middle Age *Learning*; then both of them together for a time; and in the Decline, mechanical Arts and Trades. *Learning* has its Infancy, when 'tis but trivial and childiſh; next its Youth, when it is luxuriant and juvenile; then its Strength, when 'tis ſolid and reduced; and laſtly, its old Age, when it becomes dry, exhauſted and talkative. But it is improper to look long upon theſe turning Wheels of Viciſſitude, leſt we become giddy. *The Revolutions of Learning.*

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ESSAY XIII. *Of* TRUTH.

The Nature of Truth in general.

1. WHAT is *Truth?* ſaid *Pilate* in Deriſion; and would not ſtay for an Anſwer. Certainly ſome Men delight in Giddineſs; and count it Bondage to fix an Opinion: Thus affecting a Freedom of Will in thinking, as well as in acting. And tho the Sects of this kind of Philoſophers are ceaſed; there ſtill remain certain diſputatious Wits, of the ſame Vein, tho not ſo rich. 'Tis not, however, the Difficulty and Labour of diſcovering Truth, nor the Captivity of Thought it impoſes, when diſcover'd, that brings Lies into Favour: But a natural, tho corrupt Love of the Lie itſelf. 'Tis hard to ſay, why Men ſhould love Lies; which they neither make for Pleaſure, nor Advantage, but for the Lies ſake. I know not how, *Truth* is a kind of naked and open Day-light; that ſhews not the Maſks, and Mummeries, and Triumphs of the World, half ſo ſtately as Torches and Candle-light. *Truth* may, perhaps, bear the Price of a Pearl, that ſhews beſt by Day; but not riſe to the Price of a Diamond, that ſhews beſt in varied Lights. A mixture of a Lie always adds Pleaſure. And if vain Opinions, flattering Hopes, falſe Valuations, Imaginations, and the like, were aboliſhed, ſurely mens minds would be left poor ſhrunken things; poſſeſſed with Melancholy, Uneaſineſs and Diſpleaſure. One of the Fathers called Poetry the *Wine of Devils*; becauſe it fills the Imagination, tho but with the Shadow of a Lie. Tho 'tis not the Lie that paſſes thro the Mind, but the Lie that ſinks and ſettles in it, which does the miſchief. And however theſe things are, in our depraved Judgments and Affections; yet Truth, which alone can judge itſelf, teaches, that the ſearch or courting the acquaintance and poſſeſſion thereof, is the ſovereign Good of human Nature.

The Nature of Divine and Philoſophical Truth.

2. The firſt Creature of God, in the ſix days Works, was the Light of Senſe; the laſt was the Light of Reaſon; and his Sabbath-work, on foot ever ſince, is the Illumination of his Spirit. Firſt he breathed Light upon the face of Chaos; then into the face of man; and ſtill he breathes Light into the face of his choſen. *Lucretius* ſaid well, "'Tis a pleaſure to ſtand "upon the Shore, and ſee Ships toſs'd at Sea; a Pleaſure to ſtand in a Caſ-"tle, and view a diſtant Battle: but no Pleaſure is comparable to ſtand-"ing upon the Riſing-ground of Truth, and ſurveying the Errors, the "Wanderings, the Miſts, and the Tempeſts of Mankind, in the Vale be-"low:" provided this Survey be made with Compaſſion, and not with Pride. 'Tis certainly Heaven upon Earth, for a Man's mind to move in Charity, reſt in Providence, and turn upon the Poles of Truth.

The Nature of Truth, or Veracity, in Civil Life.

3. As for Truth, or Veracity, in civil Affairs; even thoſe who practiſe it not, acknowledge, that clear and round dealing is the Honour of Man's Nature; and that a mixture of Falſhood, is like allay in Gold; which, tho it may make the metal Work the better, yet debaſes it. For theſe winding and crooked Courſes are the Ways of the Serpent, that goes baſely upon

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on the Belly; and not upon the Feet. No Vice ſo covers a man with Shame, as to be found falſe and perfidious. And therefore *Montaign* aſſigns this ſharp Reaſon why giving the *Lie* ſhould be ſo odious; *viz.* that it calls the Perſon a *Bravado* towards God, but a *Coward* towards Men: For a Liar aſſaults *God*, but ſhrinks from Man. Surely the Wickedneſs of Falſhood, and Breach of Faith, cannot be higher expreſſed, than in that it ſhall be as the laſt Peal, to call the Judgments of God upon the Generations of men: For 'tis foretold, that *Chriſt, at his ſecond coming, ſhall not find Faith upon the Earth.*

ESSAY XIV. *Of* ANGER.

Anger not to be extinguiſhed.

1. TO pretend utterly to extinguiſh Anger, is but a Stoical Oſtentation. We have better Oracles; *be angry, but ſin not: Let not the Sun go down upon your wrath.* Anger muſt be limited and confined, both in point of Height and Duration.

How to be moderated.

2. To allay a Habit or natural Inclination to Anger, there is no better Way than to reflect ſeriouſly upon the Calamities and Diſturbances it occaſions in Life. The beſt time for this Reflection is ſoon after the Fit is over; when it may be ſeen ſtrongly by a Retroſpection. *Seneca* ſaid elegantly, *Anger is like a falling Houſe, that breaks itſelf to pieces upon every thing in its way.* The Scripture exhorts us, *to poſſeſs our ſouls in patience.* And certainly, whoever is out of Patience, is out of the poſſeſſion of his Soul. It is not for Men to imitate Bees, and ſting to the loſs of their Souls[d].

How governed.

3. To conſider it juſtly, Anger is a mean thing, below the Dignity of a Man; as appears by the Weakneſs of thoſe in whom it principally reigns; *viz.* Children, Women, the Aged, and the Sick. And therefore if a Man happen to be angry, let him, if he would not forget his Dignity, carry his Anger, not with Fear, but Contempt of the Perſon; ſo as to ſeem above the Injury offer'd: which is eaſily done, where a Man can bend and govern his Anger a little.

Three Cauſes of Anger; viz. Senſibility of Injuries.

4. The Cauſes and Motives of Anger are chiefly three: *viz.* (1.) too great a Senſibility of Injuries; for no Man is angry, who feels not himſelf hurt. Whence tender and delicate Perſons muſt needs be often angry; as having ſo many things to ruffle them, which are ſcarce felt by more robuſt Natures.

Straining of the Intention.

5. (2.) A *ſecond Cauſe* or Motive of Anger, is a quick Apprehenſion and an ingenious ſtraining of an Injury offer'd, with regard to the Circumſtances thereof; ſo as to repreſent it highly contemptuous. For Contempt whets Anger, more than the Injury itſelf. And therefore the Men who are ingenious in picking out Circumſtances of Contempt, ſtrangely inflame their own Anger.

Over Tenderneſs of Character.

6. (3.) Laſtly, the Thought of an Affront, or conſequential Diminution of Reputation, ſharpens and increaſes Anger. The Remedy is, to have,

[d] *Animaſque in vulnere ponunt*

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have, as *Gonſalvo* adviſed his Soldiers, a *good ſtrong Cloth of Honour*. But in all bridling of Anger, 'tis beſt to gain time, and make ones ſelf believe the opportunity of Revenge is not yet come; but that we foreſee a deſirable one at hand, and ſo to quiet ourſelves in the interim, and reſerve it.

To prevent Anger from proving miſchievous.

7. To keep Anger from proving miſchievous, there are three things that require particular Caution. One is to avoid ſevere Words; eſpecially ſuch as are cutting and appoſite: For common Railing has little Sting. The *ſecond* is, that in Anger a Man reveal no Secrets; for this unfits him for Society. The *third* is, not peremptorily to break off the preſent Buſineſs, in a Fit of Anger; but however Paſſion may riſe, to act nothing that is irrevocable.

How to raiſe or allay Anger in another.

8. Anger, in another, is raiſed and appeaſed chiefly by a prudent choice of Times; as to incenſe Men when they are ſad, and out of humour: And again, by raking up and repeating all that may any way ſhew or aggravate the Contempt. The Storm is laid by the two contrary Means; *viz.* the choice of ſerene or chearful Hours, for firſt relating diſagreeable or provoking Matters; becauſe the firſt Impreſſion is ſtrong. The other is the ſeparating, by all poſſible Means, the Conſtruction of the Injury from the Contempt; imputing it to Ignorance, Fear, Paſſion, or what you will.

ESSAY XV. *Of* REVENGE.

The Imprudence of taking Revenge.

1. REVENGE is a kind of wild Juſtice; which, the more it ſpreads in human Nature, the more ought the Law to weed it out. For the firſt Injury only offends the Law; but Revenge entirely ſets aſide its Authority. Certainly, in taking Revenge a Man is but even with his Enemy; whereas by forgiving, he becomes his Superior: For it is a princely thing to pardon. And *Solomon* ſays, *'tis the glory of a man to paſs over a tranſgreſſion.* What is paſt is irrevocable; and wiſe Men find it enough to regard what is preſent and to come: thoſe therefore do but trifle, and diſquiet themſelves in vain, who labour about what is paſt.

Injuries ſeldom done for their own ſakes.

2. No Man does Wrong for the Wrong's ſake; but either to procure himſelf Profit, Pleaſure, Honour, or the like. Why therefore ſhould I be angry with a Man for loving himſelf better than me? And if a Man ſhould do wrong, merely out of ill Nature; yet 'tis but like the Thorn or the Briar, which prick and ſcratch, becauſe it is their Nature.

The prudential way of taking Revenge.

3. Revenge is the more excuſable, where the Law has provided no Remedy: but then the Revenge muſt be ſuch, as there is no Law to puniſh: otherwiſe a Man doubles his own Puniſhment; and gives his Enemy the Advantage. Some, when they take Revenge, give notice when it comes. This ſhews a more generous Temper; that delights not ſo much in doing the Injury, as in making the Aggreſſor repent: But baſe and cowardly Natures are like *the Arrow that flieth in the dark.*

Perfidious Friends how to be treated.

4. *Coſmus*, Duke of *Florence*, had a ſtinging Apopthegm againſt perfidious Friends; as if they were unpardonable. "You ſhall read, ſays he, "that

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" that we are commanded to forgive our Enemies; but you never read, " that we are commanded to forgive our Friends". The Spirit of *Job* was in better Tune; who ſaid, *ſhall we receive Good at the hands of God, and not be content with Evil alſo?* This is certain; he who ſtudies Revenge, keeps his own Wounds green; which would otherwiſe heal.

5. Publick Revenge is generally proſperous; as for the Deaths of *Cæſar*, *Pertinax*, *Henry* the Third of *France*, and many more: But in private Revenge the Caſe is otherwiſe. Nay, vindicative Perſons have rather the Fate of Witches; who living miſchievous, generally die unfortunate. *Publick Revenge fortunate, but not private.*

ESSAY XVI. *Of* ENVY.

1. NONE of the Paſſions are ſuppoſed to faſcinate, but *Love* and *Envy*: both which cauſe violent Deſires; ſuddenly form themſelves into Imaginations and Suggeſtions; and both readily come into the Eye; eſpecially upon the Preſence of the Object: which are the Points that conduce to Faſcination, if any ſuch thing there be [e]. The Scripture calls Envy an *evil Eye*; and the Aſtrologers call the bad Influences of the Stars, *evil Aſpects*: ſo that in the Act of Envy, there ſeems to be generally acknowledged an Irradiation, or Darting of the Eye. Nay, ſome have obſerved, that an envious Eye proves moſt pernicious when the Perſon envied is view'd in Triumph; which gives an edge to Envy: And beſides, at ſuch times the Spirits of the Perſon envied come into the outward Parts, and ſo meet the Blow [f]. *Envy and Love have ſomething like Faſcination.*

2. He who has no Virtue in himſelf, is apt to envy it in another. For Mens Minds will either feed upon their own Good, or others Evil: and he who wants the one, will ſeize the other. Again, he who deſpairs of attaining to the Virtue of another, will gladly diminiſh the Difference, by depreciating his Rival. *What Perſons are moſt inclined to Envy*; viz. *the leſs virtuous.*

3. Meddling and inquiſitive Perſons are commonly envious; for to be very inquiſitive about other Mens Buſineſs, cannot greatly conduce to the doing of ones own. Whence buſy Natures take a kind of Theatrical Pleaſure, in viewing the Fortunes of others. Nor can the Man intent upon his own Buſineſs, find much Occaſion for Envy; which is a gadding Paſſion, that loves to be abroad [g]. *The inquiſitive.*

4. Men of noble Birth are obſerved to be envious towards new-riſing Men; the former Diſtance being now alter'd: like a Deceit of the Eye, when as things appear to go off, ſome others come on. *The Nobility.*

5. The deform'd, Eunuchs, old Men, and the illegitimate are envious: For he that cannot mend his own Caſe, will do his utmoſt to impair anothers; unleſs theſe Defects light upon generous and heroical Natures, who endeavour to make them a part of their Glory: as to have it ſaid, that an *Eunuch*, or a *Cripple*, did this, in the way of a Wonder; as in the *The deform'd, illegitimate, &c.*

[e] See the *Sylva Sylvarum*, under the Article, *Imagination.*
[f] See the Article *Imagination*, in the *Sylva Sylvarum.*
[g] *Non eſt curioſus, quin idem ſit malevolus.*

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the Case of *Narses*, the Eunuch, and of *Agesilaus*, and *Tamerlane*, who were lame.

The Unfortunate restored. 6. The Case is much the same with those that rise after Misfortunes: such Men being commonly angry with the Times; and relish other Mens Sufferings as a Compensation of their own.

Those desirous of many Excellencies. 7. They who, out of Levity and Vain-glory, desire to excel in too many ways, must needs be envious; because 'tis impossible but many should surpass them in one or other of these ways. Thus the Emperor *Adrian* mortally envied Poets, Painters, and other Artificers in Ways wherein he was ambitious to excel.

Relations and Collegues. 8. Lastly, near Relations, Fellows in Office, and Persons bred up together, are apt to envy their Equals upon being advanced; because this Advancement upbraids them with their own Fortunes: as it were pointing at and galling them. It likewise comes more into the Observation of others; and Envy always reflects and redoubles from Fame and Discourse: whence *Cain*'s Envy appears the more malignant; because, when *Abel*'s Sacrifice was better accepted, no Man stood by to observe it.

The Persons least apt to be envied; viz. *the worthy.* 9. Persons of eminent Virtue are less envied when advanced; because Promotion seems their due: and no Man envies the Payment of a Debt. Besides, Envy is always joined with Self-comparison; so that where there is no Comparison, there is no Envy: whence Kings are only envied by Kings. The Unworthy are most envied in their first Rise, and afterwards less; but Men of Merit are most envied upon a long Enjoyment of Fortune. For tho their Virtue be still the same, yet it now loses of its Lustre; fresh Men growing up to eclipse it.

Nobility. 10. Nobles are less exposed to Envy in their rising; because Honours seem due to their Birth; and make but little apparent Addition to their Fortune: For Envy is like the Sun, that beats hottest upon rising Grounds. On the same Account, Persons raised by degrees are less envied than those advanced of a sudden.

Those who win their Honours hardly. 11. They whose Honours are joined with great Fatigues, Anxieties and Dangers, are less envied. For in this Case Men conceive, that Honour was dearly purchased; and sometimes begin to pity the Purchaser: but Pity is almost the certain Cure of Envy[h]. Whence the more deep and sober Politicians in high Places, are always complaining what a Life they lead; and chanting a *Quanta patimur:* Not that they feel what they say; but merely to blunt the Edge of Envy. This is to be understood of Business imposed upon such Men; and not of what they procure to themselves: For nothing excites Envy more, than an ambitious Grasping, and immoderate Monopoly of Business; as nothing extinguishes it more, than for a Man in a great Post to continue the full Rights and Privileges to his inferiour Officers; who thus become so many Skreens betwixt himself and Envy.

12. Above all, Envy beats strongest upon those who carry the Greatness of their Fortunes with Insolence and Haughtiness; and are always shewing

[h] See below, §. 13.

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ſhewing it, either by outward Pomp, or by triumphing over their vanquiſhed Adverſaries or Competitors; whereas wiſe Men will rather ſacrifice to Envy, in ſuffering themſelves to be ſometimes croſſed, and conquered, in Matters of no great Moment. Yet an open and undiſſembled Manifeſtation of Greatneſs, without Arrogance and Vain-glory, raiſes leſs Envy, than when carried in a more crafty and ſkulking Manner. For by this diſguiſed Conduct a Man impeaches Fortune, as if conſcious of his own want of Worth; and ſo provokes others to envy him.

The Cure of Envy.

13. And, as we above obſerved, that the Act of Envy has ſomewhat of Faſcination in it; ſo it admits of no other Cure, but the Cure of Enchantment: that is, to *remove the Lot*, and lay it upon another. For which purpoſe the wiſer ſort of Politicians always bring upon the Stage ſome Servant, Aſſociate, *&c.* on whom to derive the Envy that would otherwiſe fall upon themſelves. And for ſuch Tools, there are never wanting certain raſh and enterprizing Spirits; who, to get into Power, or Office, will take it on any Condition.

The Difference betwixt publick and private Envy.

14. There is, however, ſome Good in publick Envy; tho none in private. For publick Envy is a kind of wholſome Oſtraciſm, that eclipſes Men when they grow too great: and therefore proves a Rein to keep Men of Power within bounds.

Publick Envy like Infection.

15. Publick Envy, call'd in the modern Languages, *Male-content*, is a Diſeaſe in a State, like to Infection[1]: For as Infection ſpreads and taints what is ſound; ſo when Envy is got into a State, it traduces even the beſt Actions and Inſtitutions thereof; and turns them into an ill Odour: whence there is little advantage in intermixing plauſible and popular Actions with ſuch as are odious: For this only argues Weakneſs and Fear of Envy; which thus proves more pernicious, as in Infection, which thro Fear is caught the ſooner.

How known to be upon the Miniſter, and how upon the Prince.

16. This publick Envy ſeems to beat ſtronger upon the principal Officers or Miniſters of a Kingdom, than upon Kings and States themſelves. And here it is a Rule, that if the Envy be great againſt the Miniſter, when the Cauſe in him is ſmall; or if the Envy be almoſt general, or againſt all the Miniſters of State, then, tho ſecret, it ſtrikes at the King or State itſelf.

Is a reſtleſs Paſſion.

17. Envy, of all the Affections, is the moſt importunate and continual: For the Occaſions of the other Paſſions occur but ſeldom. Whence it was well ſaid, that *Envy makes no Holidays:* For 'tis ever at work. And hence it is alſo obſerved, that Love and Envy make a Man lean; which the other Affections do not, becauſe not ſo continual. 'Tis likewiſe the vileſt Affection, and the moſt depraved; for which Reaſon 'tis the proper Attribute of the Devil, who is called *the envious Man, that ſoweth Tares amongſt the Wheat by night:* for Envy always works craftily in the dark; and to the Prejudice of the beſt things, ſuch as Wheat.

[1] See the Eſſay upon *Seditions* and *Troubles*, Sect. III.

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ESSAY XVII. *Of* LOVE.

Great Men leaſt liable to extravagant Love.

1. THE Stage is more beholding to Love, than real Life: For Love is the conſtant Subject of Comedy, and ſometimes of Tragedy: but in Life it frequently proves miſchievous; one while as a *Syren*, another as a *Fury*. Among all the great and illuſtrious Perſons, whether of ancient or modern Date, ſcarce one has been affected with the mad degree of Love: which ſhews, that great Minds and great Buſineſs exclude this effeminate Paſſion. We muſt, however, except *Marc Antony* and *Appius Claudius*; the former a voluptuous and luxurious, but the latter an auſtere and prudent Man: Whence it appears, that Love may ſometimes enter not only an open, but even a well fortified Heart; if a careful Watch be not kept. It was a groveling Saying of *Epicurus*; *We are a ſufficiently ample Theatre to each other:* As if a Man, made to contemplate the Heavens, ſhould, inſtead thereof, adore but a little Idol; and ſubject himſelf to the Eye, an Organ given him for a nobler Purpoſe.

Love tyrannizes over Things.

2. 'Tis ſtrange to obſerve the Exceſs of this Paſſion; and how it inſults the Nature and true Value of things: inſomuch that to ſpeak in a perpetual Hyperbole ſuits no Subject but Love. Nor is this Hyperbole confined merely to Phraſe. The arch Flatterer, wherewith all the petty Flatterers have Intelligence, is juſtly ſaid to be a Man's ſelf; but the Lover is a greater Flatterer even than this: For never did proud Man think ſo abſurdly well of himſelf, as the Lover does of his Miſtreſs. Whence the juſtneſs of that common Saying; *'Tis impoſſible to love, and be wiſe.* Nor does this Phrenſy appear to others only; but moſt to the Perſon beloved, unleſs the Love be reciprocal. For 'tis a true Rule, that Love is always repaid with Love, or ſecret Contempt. Whence Men ſhould be watchful of this Paſſion; as it loſeth not only other things, but even itſelf. The other Loſſes attending it are elegantly expreſſed in the Fable of the Poets, which ſhews that he who preferr'd *Helen*, quitted the Gifts of *Juno* and *Pallas:* For whoever gives himſelf up to Love, bids adieu both to Riches and Wiſdom.

Its Tides.

3. This Paſſion has its Spring-Tides when the Mind is weakeſt; *viz.* at the times of great Proſperity, and of great Adverſity: tho the latter may have been leſs obſerved. For both theſe times kindle up Love, and make it more fervent: which ſhews it to be the Child of Folly. They do beſt, who, if they muſt admit of Love, make it keep quarter; and ſeparate it wholly from their ſerious Affairs, and the Buſineſs of Life: For if it once interfere with Buſineſs, it diſturbs the whole Frame thereof; and hinders Men from being ſteady to their own Ends.

Is a natural Principle in Man.

4. However it happens, military Men are much given to Love; perhaps as they are given to Wine: For Dangers commonly require to be paid with Pleaſures. There is in human Nature a ſecret Inclination and Motion to the Love of others; which, if not ſpent upon ſome one, or a few,

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few, it naturally ſpreads towards many, and makes Men humane and charitable; as we ſometimes ſee in Monks. Conjugal Love produces, ſocial Love improves, but wanton Love corrupts Mankind [k].

ESSAY XVIII. *Of* GOODNESS *and* GOOD-NATURE.

1. *Goodneſs* I call the Habit, and *Good-nature* the Inclination to promote the Welfare of Mankind. This is the greateſt Virtue of the Mind; the Character and Copy of the Deity; without which Men are but noxious Animals. Goodneſs anſwers to the theological Virtue of Charity; and admits no Exceſs, but Error. The deſire of Power in Exceſs cauſed the Angels to fall; the deſire of Knowledge in Exceſs cauſed Man to fall; but in Charity there is no Exceſs: neither can Angel or Man come into danger by it. *Goodneſs and Good-nature, what.*

2. An Inclination to Goodneſs is deeply implanted in human Nature; and if it wants an Opportunity of exerting itſelf towards Men, it turns aſide to Brutes; as we ſee in the *Turks*; who, tho a cruel and barbarous People, are merciful to Beaſts, and give Alms to Dogs and Birds. Yet this Virtue of Charity is not without its Errors. The *Italians* have a ſhrewd Proverb; *So good, as to be good for nothing.* And *Machiavel* ventured to write, almoſt in plain Terms, that *the Chriſtian Faith gave up the Good and the Innocent à Prey to Tyrants:* which he ſaid becauſe no Law, Sect, or Opinion ever carried the Point of Goodneſs ſo high as the Chriſtian Religion does. To avoid, therefore, both the Scandal and the Danger, it is proper to know the Errors of ſo excellent a Habit. *Good-nature implanted in Mankind.*

3. Endeavour the Good of others without being a Slave to their Faces, or Fancies; otherwiſe this is Facility or Softneſs, which takes an honeſt Mind Priſoner. Neither throw a Gem to *Æſop*'s Cock, that would be better pleaſed with a Barley-Corn. The Example of God is our beſt Direction in this Caſe: *He ſends his Rain both upon the juſt and unjuſt*; but does not rain Wealth, nor ſhine Honour and Virtue upon all Men equally. Common Benefits are to be communicated with all; but peculiar Benefits with a choſen few. And beware of breaking the Pattern in taking the Portrait; for Divinity makes the Love of ourſelves the Pattern, and the Love of our Neighbours the Portrait. *Sell all that thou haſt, and give it to the poor, and follow me.* But ſell not all that thou haſt, except thou come and follow me; that is, except thou have a Vocation, wherein thou mayſt do as much good with a little, as with much: otherwiſe, in feeding the Streams, thou drieſt the Fountain. *Rules for the Conduct of Goodneſs.*

4. Nor is there only a *Habit* of Goodneſs, directed by right Reaſon; but in ſome Men there is a natural *Diſpoſition* and Propenſity to it; as in others there is a natural Malignity: For ſome are naturally averſe to the good of others. The lighter kind of Malignity turns to Moroſeneſs, Oppoſition, Perverſneſs, Obſtinacy, or the like; but the blacker ſort to Envy and Malice. *Good-nature natural to ſome, and not to others.*

[k] See the *Fable* of *Cupid*, or *Love*, explained in the Author's *Sapientia Veterum*.

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lice. Such Men almoſt rejoice in the Calamities of others, and are always aggravating of them; not like the Dogs that licked *Lazarus*'s Sores, but like Flies that are always buzzing about any thing that is raw. And there are many *Miſanthropes* who delight in bringing Men to the Bough, tho they have never a Tree for the purpoſe, as *Timon* had, in their Garden. Such Diſpoſitions are the Cancers and Impoſthumes of human Nature. And yet theſe are the fitteſt Blocks to make Politicians of; like bent Timber, that is good for Ships deſigned to be toſs'd, but not for Houſes that are to ſtand firm.

The Marks and Tokens of Goodneſs.

5. There are ſeveral Parts and Signs of Goodneſs. If a Man be civil and courteous to Strangers, it ſhews him a Citizen of the World; whoſe Heart is no Iſland cut off from other Lands, but a Continent that joins them. If he be compaſſionate to the Afflicted, it ſhews a noble Soul; like the Tree which is wounded when it gives the Balm. If he eaſily pardons and forgives Offences, it ſhews a Mind perched above the reach of Injuries. If he be thankful for ſmall Benefits, it ſhews he values Mens Minds before their Treaſure. But above all, if he has St. *Paul*'s Perfection, and wiſhes to be anathematized for the Salvation of his Brethren, it ſhews a divine Nature, and a kind of Conformity with Chriſt himſelf.

ESSAY XIX. *Of* CHARITY.

Three Degrees of Charity.

1. TO return the Love of our Friends is the Charity of Publicans, and founded on the Bond of Utility; but to be well affected towards our Enemies, is one of the ſublimeſt Virtues of the *Chriſtian Religion*, and an Imitation of the Divinity. But this Charity has ſeveral Degrees; the firſt whereof is the forgiving our Enemies upon Repentance. And there is ſome reſemblance of this Charity found among the more generous wild Beaſts: For 'tis ſaid that the Lion will not exerciſe Cruelty upon the Creatures that ſubmit and fall before him. The ſecond Degree is Forgiveneſs of Enemies; tho they remain ſtubborn, without Reconciliation or Attonement. The third Degree is that, which not only pardons and excuſes, but even confers Benefits and good Offices upon Enemies.

May have their Allay.

2. But theſe Degrees either have or may have ſomewhat of Oſtentation; at leaſt ſomewhat of Greatneſs of Mind: and not proceed entirely from pure Charity. For poſſibly when any one feels Virtue flow out of him, he may be lifted up with it; and be more delighted with the Fruit of his own Virtue, than the Good and Happineſs of his Neighbour. But if a Man, when he finds any Misfortune befall his Enemy from another Quarter, be grieved and troubled at it, from the bottom of his Heart; without ſecretly rejoicing, as if he thought that his Day of Revenge and Retribution were come; this is the Virtue whoſe Oppoſite *Job* deteſts: *If I have rejoiced at the ruin of him that hated me, and triumphed that misfortune had found him out*; and this is the Exaltation, and top Perfection of *Charity*.

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ESSAY XX. *Of joining* PRUDENCE *with* INNOCENCE.

The Way of effectually counselling the vicious.

WHEN the Judgment of a Man is depraved and corrupted, he will perpetually deſpiſe and render inſignificant all the Inſtruction and Perſuaſion that does not begin with a Detection, and Repreſentation of the bad Complexion, or ill Habit, of his Mind: For this would be to apply a Remedy before the Wound is known and ſearched. Men of no Morals, who can never think juſtly, are prepoſſeſſed with a Notion, that Goodneſs in others proceeds only from Simplicity, Ignorance, and want of Practice in human Affairs; and therefore they laugh at the moſt prudent and wholeſome Advice of their Inſtructor, ſo long as they find him unacquainted with the things they have in their own Hearts; and the moſt inward Concealments and Diſguiſes of their immoral Practices. For as *Solomon* juſtly obſerves; *a Fool will never receive the Word of Wiſdom till you ſpeak the very things he has in his heart.* He, therefore, that aims not at a ſolitary Goodneſs, but at ſuch as is ſeminal and generative, ſo as to draw and prevail upon others, ſhould underſtand all thoſe things which are called the *depths of Satan*; that he may ſpeak with Authority, and truly enter into the Minds of the vicious. And to this End was given us the Precept; *Try all things, and hold to that which is beſt.* Whereby we are directed firſt to a general Examination; and then to the making a judicious Choice. And from the ſame Fountain ſprings that other Admonition; *Be wiſe as Serpents, but harmleſs as Doves.* So that there is no ſerpentine Tooth, no Venom, no Sting, that we ought to be unacquainted with. And let not any one here be afraid of Pollution and Taint: For the Sun, tho it enters the moſt loathſome Places, is not defiled thereby. Nor again, let any one ſuſpect it is tempting of God; for we are aſſured in Scripture, that *he is ſufficient to keep us unſpotted* [1].

ESSAY XXI. *Of* SUPERSTITION.

Atheiſm leſs pernicious than Superſtition.

1. IT is better to have no Belief of a God, than one that is diſgraceful and unworthy of him: The firſt being but Infidelity; the other Impiety and Contumely. And certainly Superſtition is a Reproach of the Deity. *Plutarch* ſaid well, "That he had rather Men ſhould aſſert there "was no ſuch Perſon as *Plutarch*; than that there was one *Plutarch* who "devoured his Children as ſoon as they were born". And as the Reproach of Superſtition is greater towards God; ſo the Danger thereof is greater towards Men. *Atheiſm* ſtill leaves a Man to Senſe, to Philoſophy, natural Affection, Laws, and the Deſire of Reputation: All which, tho Religion were wanting, may procure an external moral Virtue. But *Superſtition* diſmounts all theſe; and ſets up an abſolute Tyranny in the Minds of Men. Whence Atheiſm ſeldom breeds Diſturbances in States: For it makes

[1] See the *De Augmentis Scientiarum*, Sect. XX. *&c.*

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makes Men cautious and mindful of their own Security. Nay, we see that the Times inclin'd to *Atheism*, as those of *Augustus Cæsar*, were quiet Times. But *Superstition* has been the Ruin of numerous States; as introducing a new *Primum Mobile*, that over-rules all the Spheres of Government.

The Procedure of Superstition.

2. The Master of *Superstition* is the People; and in all Superstition wise Men follow Fools; and Arguments are fitted to Practice, in an inverted Order. It was gravely said by certain Prelates in the Council of *Trent*, that the Schoolmen, whose Doctrine was there prevalent, were like Astronomers, who had feigned Eccentricks, Epicycles, *&c.* to solve the celestial *Phænomena*, tho they knew there was really no such Machinery; for that in like manner, the Schoolmen had framed subtile and intricate Axioms, to solve the Practice of the Church.

Its Causes.

3. The Causes of *Superstition* are, (1.) pleasing and sensual Rites and Ceremonies; (2.) Excess of external and pharisaical Holiness; (3.) too great Reverence of Traditions, which must needs load the Church; (4.) the Stratagems of Prelates for their own Ambition and Lucre; (5.) the over-favouring of good Intentions, which opens the Door to Novelties and Superstitions; (6.) the injudicious Application of human Examples to divine Matters, which breeds a spurious mixture of Imaginations; and (7.) barbarous Times, especially if join'd with Calamities and Disturbance.

Its Deformity.

4. Superstition unmask'd is a deform'd thing: for as the being so like a Man adds Deformity to the Ape; in like manner Superstition is the more deform'd for its Likeness to Religion. And as wholesome Meats corrupt to little Worms; so good Forms and Orders corrupt into petty Observances.

Superstition to be avoided in Reformation.

5. There is sometimes Superstition shewn in avoiding Superstition; when Men think to do best, by receding fartheſt from the Superstition that before prevailed. Care therefore should be taken in the Reformation of Religion, lest, as in ill purging, the good be taken away with the bad: which commonly proves the Case, when the People is the Reformer.

ESSAY XXII. *Of* ATHEISM.

The Belief of a Deity necessary.

1. IT is harder to believe all the monstrous Fables of the *Alcoran*, the *Talmud*, or the *Legend*, than that this universal Frame is without a *Mind*. God therefore never wrought a Miracle to confute Atheism; because his ordinary Works confute it. 'Tis true, that a little natural Philosophy inclines Men to Atheism; but depth in Philosophy always brings them about to Religion. For while the Mind looks upon *second Causes* scatter'd, it may sometimes go no farther: but when it beholds the Chain of them collected and linked together, it must needs have recourse to Providence and a Deity. Nay, that School which is most accused of Atheism, most clearly demonstrates Religion; *viz.* the School of *Leucippus*, *Demo-*

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Democritus and *Epicurus*. For it is much more probable, that four mutable Elements, and one immutable fifth Eſſence, duly and eternally placed, ſhould require no God; than that a Hoſt of Atoms, and infinite Seeds floating at random, ſhould have produced this regular and beautiful Frame of things, without a divine Marſhal.

That Atheiſm is rather in Mens Words than Thoughts

2. We read in Scripture, *the Fool hath ſaid in his heart, there is no God.* 'Tis not *the Fool hath thought in his heart*; ſo that he rather ſays it to himſelf, as what he would willingly have, than as what he can thoroughly believe. For only they deny a God, who wiſh there were none. That Atheiſm is rather in the Lip than in the Heart appears in nothing more than in this, that Atheiſts are always defending their Opinion; as if they diſtruſted it, and would gladly be ſtrengthened by the Conſent of others. Nay, we find Atheiſts ſtrive, as other Sects do, to make Converts; and what is monſtrous, ſome of them will ſuffer for Atheiſm, rather than recant: whereas if they were really perſuaded there was no God, why ſhould they trouble themſelves about it?

The Opinion of Epicurus *upon the Subject.*

3. *Epicurus* is charged with diſſembling, merely for his Reputation, when he affirmed there were bleſſed Natures; but ſuch as enjoyed themſelves, without interpoſing in the Government of the World. In this they ſay he temporized; and ſecretly thought there was no God. But certainly he is traduced; for his Words are noble and divine. *'Tis not prophane,* ſays he, *to deny the Gods of the Vulgar; but it is prophane to apply the vulgar Opinions to the Gods. Plato* could not have ſpoke better. Whence it appears, that tho he had the aſſurance to deny the divine Adminiſtration of things; yet he went not ſo far as to deny the divine Nature.

The Savages have a Notion of God.

4. The Weſt *Indians* have Names for their particular Gods, tho they have no general Name for God: As if the *Romans* ſhould have had the Names, *Jupiter*, *Apollo*, *Mars*, &c. but not the word *Deus*. This ſhews, that even thoſe barbarous People have a Notion of the Thing, tho not of the Extent thereof. So that the mere Savages join with the ſubtileſt Philoſophers againſt the Atheiſts.

Who are Atheiſts.

5. The contemplative Atheiſt is rare; ſuch as *Diagoras*, *Bion*, or *Lucian* perhaps, with ſome few others: yet they ſeem to be more than they are; becauſe all that oppoſe a received Religion, or Superſtition, are branded by the contrary Party with the Name of Atheiſts. But the great Atheiſts indeed are Hypocrites; who are ever handling holy things, without feeling: ſo that they muſt needs be cauterized in the End.

The Cauſes of Atheiſm.

6. The Cauſes of *Atheiſm* are, (1.) Diviſions in Religion, if they be numerous; for any one Diviſion increaſes Zeal on both ſides; but many introduce Atheiſm. (2.) Another Cauſe is, the *Scandal of Prieſts*; where St. *Bernard*'s Words prove true: *We can no longer ſay like People, like Prieſt; for the People now are not ſo bad as the Prieſts.* (3.) A third Cauſe is, a prophane Cuſtom of Sporting, and Ridiculing in ſacred things; which by degrees deface the Reverence of Religion. (4.) And laſtly, learned Times, eſpecially if attended with Peace and Proſperity: For Troubles and Adverſities ſtrongly bend the Mind to Religion.

7. To

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The Diſadvantages of Atheiſm to particular Perſons.

7. To deny a God deſtroys the Nobility of human Nature: For certainly Man is allied to the Brute by his Body; and if he be not allied to God by his Spirit, he is a baſe and ignoble Creature. It likewiſe deſtroys the human Magnanimity and Exaltation: For example, obſerve what Generoſity and Courage a Dog will put on, when he finds himſelf ſupported by a Man; who to him is a kind of God. This Courage is manifeſtly ſuch, as the Creature, without confidence of a better Nature than his own, could never attain. So Man, when he relies upon the divine Protection and Favour, acquires ſuch a Strength and Aſſurance as human Nature, left to itſelf, could never obtain. Therefore, as Atheiſm is every way odious, ſo alſo in this, that it deprives our Nature of the Means of riſing above human Frailty.

And to Nations.

8. The Caſe is the ſame in Nations as in particular Perſons. Never was ſuch a State for Magnanimity as the *Roman*; of which *Cicero* declares, that it excell'd all others merely in Piety, and the Belief of an over-ruling Providence[m].

ESSAY XXIII. *Of* MIRACLES.

The Difference betwixt the Miracles of Chriſt and others.

WHEN God had created the Univerſe, he ſurveyed it; and ſaw that all was extremely good. And our Saviour in all his Miracles, which are new Creations, that break thro the Laws of the firſt, performed none but ſuch as breathed Beneficence and Love. *Moſes* performed Miracles; and brought variety of Plagues upon the *Egyptians*. *Eliſah* performed Miracles; and ſhut up the Heavens, ſo that it rained not upon the Earth: And again, brought the Fire of God from Heaven upon the Captains and their Bands. *Eliſha* performed a Miracle; and brought two of the Bears out of the Wood to deſtroy the Children that mock'd him. St. *Peter* ſtruck *Ananias* dead; and St. *Paul* ſtruck *Elymas* the Sorcerer with Blindneſs: But Jeſus did nothing of this kind. The Spirit of God deſcended upon him in the form of a Dove; in alluſion to which he ſaid, *ye know not what Spirit ye are of:* For the Spirit of Jeſus is the Spirit of the Dove. Thoſe Servants of the Lord were as his Oxen treading out the Corn, and trampling down the Chaff: But Jeſus, the Lamb of God, is without Anger, without Judgments. All his Miracles were beſtowed upon the Body; and all his Doctrine upon the Soul of Man. Man's Body ſtands in need of Suſtenance, Defence from external Injuries, and of Remedies: Accordingly Jeſus brought ſhoals of Fiſh into the Nets to ſupply Man with Proviſion; he converted Water into Wine, to rejoice the Heart of Man; he pronounced Barrenneſs upon the Fig-tree for not performing its Office, and ſupplying Food to Man; he multiplied Fiſhes and Loaves

[m] *Quam volumus, licet, Patres Conſcripti, nos amemus, tamen nec numero Hiſpanos, nec robore Gallos, nec calliditate Pœnos, nec artibus Græcos, nec denique hoc ipſo hujus gentis & terra domeſtico nativoq; ſenſu Italos ipſos, & Latinos, ſed* Pietate *ac* Religione, *atque hac una ſapientia, quod Deorum immortalium Numine omnia regi gubernariq; perſpeximus, omnes gentes nationeſque ſuperavimus.*

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Loaves for the feeding of thouſands. He allay'd the Winds, which threatned Deſtruction to the Mariners; he reſtored Limbs to the Lame, Sight to the Blind, Speech to the Dumb, Health to the Sick, clean Fleſh to the Leprous, a ſound Mind to the Poſſeſſed, and Life to the Dead. But *Jeſus* perform'd no Miracles of Judgment; his were all Works of Beneficence, and friendly to Man: ſo that we may truly ſay of him, *he did all things well.*

ESSAY XXIV. *Of* IMPOSTURE.

IMpoſture has three kinds of Stile or Forms of Speech. The firſt is uſed by thoſe, who, as ſoon as they have got any Matter, work it into an Art, impoſe Technical Terms upon it; then reduce all things into Diſtinctions; and from theſe draw out Poſitions, or Points of Doctrine, and raiſe Oppoſitions by Queſtion and Anſwer. And hence proceeded the Duſt and Chaff of the Schoolmen. *Three Stiles of Impoſture.*

2. The ſecond is the Stile of thoſe who with a flight of Wit, like inſpired Poets, invent vaſt varieties of Examples; to draw in the Minds of Men. Whence we have the Lives of the Fathers, and numberleſs Fictions of the ancient Hereticks.

3. The third, is the Stile of thoſe who fill all things with Myſteries, lofty Speeches, Allegories and Alluſions: And in this Myſtic and Gnoſtic Way, many Hereticks have trod. The *firſt* is calculated to enſnare the Senſe and Underſtanding; the *ſecond* to entice; the *third* to ſtupefy: and all of them to ſeduce Mankind [n].

ESSAY XXV. *Of* HYPOCRITES.

1. THE Boaſts of Hypocrites are confined to the Works of the firſt Table; or conſiſt only in the Veneration due from Man to God. There are two Reaſons of this: For firſt, theſe Works have a greater Pomp of Sanctity; and ſecondly, a leſs Oppoſition to Vice. The Confutation therefore of Hypocrites is, to ſend them from the Works of *Sacrifice* to the Works of *Mercy*. *I will have Mercy, and not Sacrifice.* And again, *pure Religion and unſpotted before God is this, to viſit the Fatherleſs and Widows in Affliction.* And again, *He who loves not his Brother whom he has ſeen, how ſhall he love God, whom he has not ſeen?* *The Vaunts of Hypocrites regard Sacrifice rather than Mercy.*

2. But there are certain ſublime and tumid Hypocrites, who being deceived, and thinking themſelves worthy of a cloſe Converſation with God, neglect the Offices of Charity and Beneficence to their Neighbour, as ſmaller Matters. And this Error, tho it was not the Foundation of a monaſtic Life, yet added Exceſs to what at firſt was well deſign'd. For 'tis juſtly ſaid, *that the Gift of Prayer is a great Gift in the Church*; and 'tis *The Reſemblance of Hypocriſy to Prayer.*

[n] See more to this Purpoſe, in the firſt Part of the Author's *Novum Organum.*

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'tis of Uſe to the Church that there ſhould be Societies of Men releas'd from worldly Cares, and ſet apart to ſollicit God with their devout and aſſiduous Prayers for the Good of the Church. But Hypocriſy has a great Reſemblance with this Ordination; tho the whole Inſtitution is not condemned, but only the fierce and boaſting Spirits reproved: For *Enoch*, who walked with God, propheſy'd, as we find in St. *Jude*, and benefited the Church with the Fruit of his Propheſy; and *John* the Baptiſt, whom ſome make the Founder of a monaſtick Life, miniſter'd greatly both in propheſying and baptizing.

The diſtinguiſhing Marks of Hypocrites.

3. But for thoſe who are ſo very officious towards God, this Queſtion is put; *If thou ſhalt do juſtly, what doſt thou give to God, or what ſhall he receive from thine Hand?* The Works of Mercy therefore, when they are wanting, infallibly diſtinguiſh Hypocrites. The contrary is the Caſe with Hereticks: For as Hypocrites cloak their Injuries to Man under their pretended Sanctity towards God; ſo Hereticks, under a certain kind of Morality towards Man, inſinuate their Blaſphemies againſt God. Another Mark of Hypocrites is, that in the Church, and among the People, they ſwell, as if blown up with a ſacred Fury, and ſet all things in a Flame; but to ſee them in their Solitudes, private Meditations and Converſations with God, they are cold, lifeleſs and languid; full of Malice, and the old Leaven.

ESSAY XXVI. *Of* HERESIES.

Two Cauſes of Hereſy.

1. THERE are two Cauſes of Hereſy; *viz.* the Ignorance of the Will, and the Ignorance of the Power of God: which is well expreſs'd in this fundamental Canon; *Ye err, not knowing the Scriptures; nor the Power of God.* The Will of God is beſt reveal'd in the Scriptures, which we are to ſearch; but his Power is beſt reveal'd by the Creatures, which we are to contemplate. The Fullneſs of the Power of God ſhould therefore be ſo aſſerted, as not to blemiſh his Will; and the Goodneſs of his Will to be ſo maintain'd as not to leſſen his Power. True Religion therefore lies in a Mean betwixt Superſtition and ſuperſtitious Hereſies on the one ſide, and Atheiſm and prophane Hereſies on the other.

The Difference between Superſtition and Atheiſm.

2. Superſtition, rejecting the Light of Scripture, and following corrupt or apocryphal Traditions, new Revelations, or falſe Interpretations of the Scriptures, feigns many things concerning the Will of God, that deviate from, and are foreign to their Senſe. But Atheiſm mutinies, and takes Arms againſt the Power of God; not believing his Word, or that it reveals his Will, from a Diſbelief of that Power, to which all things are poſſible. And the Hereſies proceeding from this Fountain ſeem of a more heinous Nature than the reſt; for thus in Civil Government 'tis a blacker Crime to diminiſh the Power and Majeſty of the Prince, than to touch his Character.

3. The

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3. The Hereſies which diminiſh the Power of God, are of three Degrees, excluſive of downright Atheiſm [o]; and reſt upon one and the ſame Myſtery, or Pretence of Goodneſs; *viz.* the clearing of the Will of God from all Aſperſion of Evil. The *firſt* Degree is of thoſe who make two equal Principles, contrary to, and contending with each other; the one a Principle of Good, and the other a Principle of Evil. The *ſecond* Degree is of thoſe who think the Majeſty of God injured by raiſing a poſitive and active Principle againſt him; and therefore, rejecting this Audacity, oppoſe to him a negative or privative Principle: For they would have the Work of Matter and the Creation, by a native, internal, and ſubſtantial Principle, to tend and return into Confuſion and nothing: not conſidering that it requires the ſame Omnipotent Power to annihilate Matter, as to create it. The *third* Degree is of thoſe who reſtrain the former Opinion to human Actions, which are ſinful; and make them ſubſtantially depend, without any Connection of Cauſes, upon the internal Will and Pleaſure of Man; aſſigning wider Limits to the Knowledge, than to the Power of God, or rather to that Part of his Power (becauſe Knowledge is Power) by which he knows; than to that by which he moves and acts: Th[illegible] making him indolently to foreknow things which he does not predeſtinate or pre-ordain. But whatever depends not upon God, as an Author and Principle, muſt, by Connection, and ſubordinate Degrees, be in the Place of God; a new Principle, and a kind of under-God. Whence this Opinion is juſtly rejected as injurious, and leſſening both to the Majeſty and Power of God. For it is truly ſaid, that God is not the Author of Evil: Not becauſe he is no Author, but becauſe he is no evil Author.

The Hereſies that leſſen the Power of God are of three Degrees.

ESSAY XXVII. *Of the* CHURCH.

WE every where meet with the Contradiction of Tongues out of the Tabernacle of God; but within that it is ſaid, Men ſhall be protected from them. *Thou ſhalt protect them in thy Tabernacle from the Contradiction of Tongues.* Accordingly, which way ſoever we turn ourſelves, there is no Determination of Controverſies, except within this Tabernacle; that is the Unity of the Church. But obſerve, that in the *Tabernacle* there was an Ark; and in that Ark the Teſtimony, or Tables of the Law: ſo that the Shell of the Tabernacle is little, without the Kernel of the *Teſtimony*. The Deſign of the Tabernacle was to preſerve and deliver the Teſtimony. In the ſame manner 'tis the Office of the Church to preſerve and deliver down the Scriptures: but the Soul of the Tabernacle is the *Teſtimony* [p].

[o] See above, ESSAY XXII.

[p] See the Eſſay upon Unity in Religion, Sect. III. *ſub finem.*

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ESSAY XXVIII. *Of* DEATH.

The Fear of Death weak and childiſh.

1. MEN fear Death, as Children fear the Dark. And as that natural Fear in Children is increaſed by frightful Tales; ſo is the other. Certainly, the Contemplation of Death, as the Wages of Sin, and the Paſſage to another World, is pious and wholeſome; but the Fear of it, as a Debt due to Nature, weak and empty. Groans, Convulſions, weeping Friends, Funeral Ceremonies, and the like, ſhew Death terrible: yet there is no Paſſion ſo weak, but conquers the Fear of it; and therefore Death is no ſuch terrible Enemy. Revenge triumphs over Death; Love ſlights it; Honour aſpires to it; Dread of Shame prefers it; Grief flies to it; Fear anticipates it. After *Otho* had ſlain himſelf, Pity, the tendereſt of the Affections, moved many to die and follow him. Nay, *Seneca* judges a Man would die, tho he were neither valiant nor miſerable; merely thro a wearineſs of doing the ſame things over and over again.

Great Minds deſpiſe it.

'Tis no leſs worthy of notice, how little alteration the approaches of Death make in good Minds, who appear the ſame to the laſt. *Auguſtus* died with a Compliment; *Tiberius* in Diſſimulation; *Veſpaſian* with a Jeſt; *Galba* with a Sentence; and *Septimius Severus* with a form of Diſpatch. The *Stoicks* beſtow'd too much Coſt upon Death; and by their great Preparations made it appear more frightful. Whereas it is as natural to die, as to be born; and to an Infant, perhaps, the one is as painful as the other.

How to diminiſh the Pain and Apprehenſion of Death.

3. He who dies in ſome earneſt Purſuit, is like a Man wounded in hot Blood; and ſcarce feels the Blow. Whence to have the Mind fix'd and intent upon ſome good Object, leſſens the Pain of Death. But above all, 'tis ſweeteſt to depart when a Man has obtain'd his Ends, and worthy Expectations. Death alſo has this Advantage, that it opens the Gate to Fame, and extinguiſhes Envy.

SECT.

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SECT. II.

ESSAYS UPON OECONOMICAL SUBJECTS.

ESSAY I. *Of* YOUTH, *and* AGE.

1. A Man young in Years, may be old in Hours; if he has loſt no Time: but this rarely happens. Youth is generally like the firſt Thought, not ſo wiſe as the ſecond: For there is a Youth in Mens Thoughts, as well as their Ages. Yet the Invention of young Men, is more lively than of old; and Imaginations ſtream into their Minds better, and as it were more divinely. *Youth ſeldom paſſed to the beſt Advantage.*

2. Natures diſorder'd with much Heat, violent Deſires and Perturbations, are not ripe for Action, till they have paſs'd the Meridian of Life: as we ſee in *Julius Cæſar*; and again in *Septimius Severus*, of whom 'tis ſaid, *That his juvenile Years were full of Errors, or even Fury*[q]; and yet he was almoſt the ableſt Emperor of the whole Liſt. But compoſed Natures may flouriſh even in Youth: as appears by *Auguſtus Cæſar*, *Coſmus* Duke of *Florence*, and others. *Impetuous Tempers not ſoon fit for Action.*

3. On the other hand, Heat and Vivacity in old Age make an excellent Compoſition for Buſineſs. Young Men are fitter to invent than to judge; fitter for Execution, than for Counſel; and fitter for new Projects, than eſtabliſh'd Buſineſs. For old Mens Experience directs them in things that fall within its reach; but miſleads them in new Matters. *Vivacity in old Age makes a fit Compoſition for Buſineſs.*

4. The Errors of young Men are often the Ruin of Buſineſs: whereas the Errors of old ones ſeldom go farther than this, that more might have been done, or ſooner. Young Men in the Management of Buſineſs graſp more than they can hold; ſtir more than they can ſtill; flie to the End, without well conſidering the Steps and the Means; abſurdly follow certain Rules they have fallen upon by Accident; uſe violent Remedies at firſt; and laſtly, what doubles all Errors, do not acknowledge or retract them; like an unruly Horſe, that will neither ſtop nor turn. Old Men object too much, conſult too long, venture too little, repent too ſoon, and ſeldom drive Buſineſs to a full Period; but content themſelves with a Mediocrity of Succeſs. *The Difference betwixt the Errors of young Men and old.*

5. Certanly it were proper to mix old Men and young together in Buſineſs. This would prove uſeful in preſent, becauſe the Advantages of both Ages might thus correct the Defects of either: and uſeful in future, becauſe young Men might thus learn, while old ones govern'd. And laſtly, it would be better for compoſing external Accidents; becauſe Age procures Authority, as Youth does Favour and popular Eſteem. *A mixture of Old and Young recommended in Buſineſs.*

6. But

[q] *Juventutem egit erroribus, imo furoribus plenam.*

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Young Men more moral than old ones.

6. But in Morality, Youth perhaps will have the Preheminence; as Age has in Policy. A certain Rabbi from this Text, *Your young Men ſhall ſee Viſions, and your old Men ſhall dream Dreams*, infers, that young Men are admitted nearer to God, than old ones; becauſe *Viſion* is a clearer Revelation than *Dream*. And certainly, the more a Man drinks of the World, the more he is intoxicated with it; and old Age rather improves Men in the Powers of the Underſtanding, than in the Virtues of the Will and Affections.

Three Kinds of early ripe Genius's.

7. Some ſhew an over-early Ripeneſs in Youth, but ſoon fade and decay as they advance in Years. Theſe are *firſt* ſuch as have brittle Wits, the Edge whereof is ſoon turn'd; ſo *Hermogenes*, the Rhetorician, wrote Books that are extremely ſubtile, and ſoon after became ſtupid. A *ſecond* Sort are thoſe that have ſome natural Faculties, more becoming Youth than Age; ſuch as fluent and florid Speech; which is laudable in the young, but not in the old. So *Tully* ſaid of *Hortenſius*, *He continued the ſame when he ought not*[r]. A *third* kind is ſuch as ſet out too faſt at firſt; and have a greater Vivacity than ſucceeding Years can ſupport: as was the Caſe of *Scipio Africanus*, of whom *Livy* ſays, *his latter Life fell ſhort of his firſt* [s].

ESSAY II. *Of* MARRIAGE, *and* SINGLE LIFE.

That childleſs Men have been beneficial to the Publick.

1. THE Man who hath a Wife and Children has given Hoſtages to Fortune; for they are Impediments to great Enterprizes, whether in the way of Virtue or Vice. Certainly the nobleſt public Works have proceeded from childleſs Men; who both in Affection and Fortune wedded and endowed the People. Yet it ſeems more reaſonable that thoſe who have Children ſhould ſhew the greater Concern for Futurity; to which they know their deareſt Pledges muſt be tranſmitted.

The Cauſes of Mens living ſingle.

2. There are ſome, however, who having no Children, are regardleſs of their own Memory, terminate their Thoughts with themſelves, and imagine the Care of Poſterity belongs not to them. There are others that account a Wife and Children but as Bills of Charges. Nay, there are ſome rich covetous Men, who fooliſhly pride themſelves in having no Children; in order to be thought ſo much the richer. But the moſt common Cauſe of living ſingle is Liberty; eſpecially in certain ſelf-pleaſing humorous Minds, which are ſo ſenſible of every Reſtraint, as almoſt to think their Girdles and Garters to be Bonds and Shackles.

The Advantages or Diſadvantages of Celebacy to the ſeveral Profeſſions.

3. Unmarried Men are the beſt Friends, beſt Maſters, beſt Servants, but not always the beſt Subjects; for they are light to run away: and almoſt all Fugitives are Batchelors. Celebacy ſuits well with Eccleſiaſticks; for Charity will hardly water the Ground, where it muſt firſt fill a Pool. 'Tis a thing indifferent in Judges and Magiſtrates: for if they ſhould be facile

[r] *Idem manebat, neque idem decebat.*
[s] *Ultima primis cedebant.*

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facile and corrupt, a Servant might prove much more rapacious than a Wife. As for Soldiers, I find that Generals in their Hortatives, commonly put them in mind of their Wives and Children. And the Contempt of Marriage amongſt the *Turks* debaſes the common Soldiery. Certainly, Wife and Children are a kind of humanizing Diſcipline: and ſingle Men, tho they are often more munificent and charitable, becauſe their Fortunes are leſs exhauſted, yet prove more cruel and hard-hearted; becauſe their Tenderneſs is leſs called upon.

The Tempers beſt diſpoſed for Matrimony.

4. Grave Natures, led by Cuſtom, and therefore conſtant, generally make uxorious Huſbands. Thus it is ſaid of *Ulyſſes*, that *he preferr'd his old Woman to Immortality*. Chaſte Women are commonly proud and froward; as preſuming upon the Merit of their Chaſtity. 'Tis one of the beſt Bonds, both of Chaſtity and Obedience in the Wife, if ſhe think her Huſband wiſe; which ſhe will never do, if ſhe find him jealous. Wives are young Mens Miſtreſſes; Companions for middle Age; and old Mens Nurſes. So that a Man may have a Reaſon to marry at any time [t]. But he was reputed one of the wiſe Men, who being aſked when a Man ſhould marry; anſwer'd, *A young Man not yet, an old Man not at all.*

Why bad Husbands have often good Wives.

5. It often happens, that bad Huſbands have good Wives; whether the Huſband's Kindneſs is in this Caſe more highly valued when it comes; or whether the Wife takes a Pride in her own Patience. However this be, if the bad Huſband was of her own chooſing, againſt the Conſent of Friends, ſhe will be ſure to ſtifle her Sufferings, and varniſh her Folly.

ESSAY III. *Of* PARENTS, *and* CHILDREN.

The State of Parents compared with thoſe that are without Children.

1. THE Joys of Parents are ſecret; ſo are their Griefs and Fears: They cannot utter the one, and will not utter the other. Children ſweeten Labours; but they imbitter Misfortunes: They increaſe the Cares of Life; but mitigate the Thoughts of Death. Perpetuity by Generation is common to Brutes; but Perpetuity by Memory, Deſerts and Works, is proper to Man. And ſurely the nobleſt Works and Foundations have proceeded from childleſs Men; who endeavoured to expreſs the Images of their Minds, where thoſe of their Bodies failed. Whence the Care of Poſterity appears greateſt in thoſe that have no Poſterity. The firſt Ennoblers of their Families are moſt indulgent towards their Children; beholding them as the Continuance, not only of their Species, but alſo of their Works; and ſo both Children and Creatures.

The Affection of Parents often unequal to their Children.

2. The Degrees of Affection in Parents towards their Children is often unequal, and ſometimes unjuſt; eſpecially in the Mother. So *Solomon* ſays; *A wiſe Son rejoiceth his Father, but a fooliſh Son is the heavineſs of his Mother.* We ſhall ſometimes ſee, in a Houſe full of Children, one or two of the eldeſt reſpected, and the youngeſt fondled; whilſt others in the middle ſeem

[t] *Socrates* being ask'd by one whether he ſhould marry; is ſaid to have anſwer'd, *Do or do not, you will repent it.*

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ſeem in a manner overlook'd, who nevertheleſs frequently prove the beſt.

Parents to be liberal to their Children.

3. The Illiberality of Parents towards their Children, is a pernicious Error; as it renders them baſe; acquaints them with Shifts; makes them herd with mean Company; and riot more when they come to Plenty. It is, therefore, proper that Parents ſhould keep a ſtrict Authority towards their Children, but a ſlack Purſe.

Emulation not to be ſtirr'd up betwixt Brothers.

4. There is an imprudent Cuſtom on foot among Parents, Schoolmaſters and Servants, of breeding Emulation between Brothers, during Childhood; which frequently turns to Diſcord when they are Men, and diſturbs Families.

No great difference betwixt Sons and Nephews.

5. The *Italians* make little difference between Children and Nephews, or near Relations; but provided they be of the ſame Blood, they judge it not very material to have them their own Iſſue. And to ſay the Truth, in Nature 'tis much the ſame; ſo that we often ſee a Nephew reſemble an Uncle, or a Kinſman, more than his own Parent.

Parents to determine early the Courſe of Life for Children.

6. Let Parents fix their Children young in the kind of Life they intend them: for at this time they are moſt flexible. And let them not in the Choice pay too great a Regard to the Inclination of their Children; as imagining a Child will take beſt to that which he likes moſt. If indeed the Affection or Aptneſs of the Child be extraordinary, 'tis proper not to croſs it; but generally the Precept is good, *Chooſe what is beſt, and Cuſtom will make it pleaſant and eaſy.* Younger Brothers are commonly fortunate; ſeldom or never, where the elder are diſinherited.

ESSAY IV. *Of* CUSTOM, *and* EDUCATION.

The Power of Cuſtom only matched by votary Reſolution.

1. MEN commonly think according to their Inclinations; ſpeak according to their Learning, and imbibed Opinions; but generally act according to Cuſtom. And therefore, as *Machiavel* well obſerves, tho in a bad Example, there is no truſting to the Force of Nature, nor great Proteſtations, unleſs they are ſtrengthen'd by *Cuſtom.* His Example is, that for going thro with a deſperate and cruel Undertaking, no Dependance ſhould be had upon the Fierceneſs of a Man's Nature; or upon daring Promiſes, much leſs Oaths; but that a Perſon ſhould be choſe for the purpoſe, who had been accuſtom'd to Blood and Slaughter. *Machiavel* knew nothing of a Friar *Clement*, nor a *Ravillac*, nor a *Jauregny*, nor a *Baltazar Gerard*, nor a *Guy Faux*; yet his Rule holds good, that Nature, and all the Ties of Words, are not ſo ſtrong as *Cuſtom.* But Superſtition is now arrived to ſuch an height, that the ſtaunch Aſſaſſin is as remorſeleſs as the harden'd Butcher; and *votary Reſolution* is become, even in matter of Blood, equivalent to *Cuſtom.*

2. In

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2. In all other Caſes the Power of *Cuſtom* is manifeſt; ſo that one might wonder to hear Men profeſs, proteſt, engage, ſpeak high, and yet go on to act in their accuſtom'd manner, regardleſs of all that had paſs'd; as if they were mere Images, or Machines moved only by the Wheels of Cuſtom. The Tyranny of *Cuſtom* appears in many other Particulars. The *Indian* Gymnoſophiſts, both ancient and modern, quietly laying themſelves upon a Pile of Wood, were ſacrificed by Fire: And even the Women ſtrove to be burnt with their Huſbands. The *Spartan* Boys were anciently ſcourged upon the Altar of *Diana*, almoſt without a Cry or a Groan. I remember, in the beginning of Queen *Elizabeth*'s Reign, a condemn'd *Iriſh* Rebel petition'd the Deputy to be hang'd in a With, and not in a Halter; becauſe a With had been uſed in executing former Rebels. There are Monks in *Ruſſia*, who for Penance will ſit a whole Winter's Night in a Veſſel of Water, till they are wedged between Ice. And many ſurprizing Examples may be produced of the Force of *Cuſtom*, both upon the Mind and Body. Since *Cuſtom*, therefore, is the principal Ruler of human Life, let Men endeavour to engraft good Cuſtoms. *Inſtances of the Tyranny of Cuſtom.*

3. Certainly that Cuſtom is moſt powerful, which is begun in Youth. This we call *Education*; tho no more than an early Cuſtom. So, the Tongue is more pliant to all the Expreſſions and Sounds of the Languages, and the Limbs more agile and fit for all Motions, in Youth, than afterwards. For thoſe who learn late, cannot ſo well take the Ply; except ſuch Minds as have not ſuffer'd themſelves to fix, but are kept open to receive continual Improvement: which is exceeding rare. *Good Habits to be acquired early.*

4. But if the Force of Cuſtom, when ſimple and ſeparate, be ſo great; the Force of *Cuſtom*, when conjoined and aſſociated, is much greater. For here Example teaches, Society refreſhes, Emulation ſtimulates, and Glory raiſes: So that here the Force of *Cuſtom* is in its Exaltation. Certainly, the great increaſe of Virtues in human Nature, depends upon Societies well inſtituted and diſciplin'd. For good Governments, and good Laws, nouriſh Virtue when grown; but do not much mend that Seed. The Misfortune is, that the moſt effectual Means are ſometimes applied to the leaſt deſirable Ends. *The Force of Cuſtom greateſt in Society.*

ESSAY V. *Of* CONVERSATION *and* DISCOURSE.

1. SOME in Diſcourſe rather affect being commended for Wit, in maintaining all Arguments, than for Judgment, in diſcerning the Truth; as if it were a Praiſe to find what might be ſaid, and not what ſhould be concluded. Some abound in certain Sets of common Places; but in other Subjects want Variety. This kind of Poverty is uſually irkſome, and, when once diſcovered, ridiculous. The more honourable part of Diſcourſe is to give the Occaſion; and again to moderate and paſs to another Subject: For this is leading the Dance. 'Tis proper in Converſation to vary the Subject ſometimes, and intermix Diſcourſe of the preſent Occaſion with Diſpute; Relations with Arguments; Queſtions *Errors and Poverty in Converſation, how to be avoided.*

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with Opinions; and Jeſt with Earneſt: For 'tis cloying to dwell long upon any thing.

Jeſting, how to be regulated. 2. As for *Jeſting*, there are certain things that ought to be privileged from it; ſuch as Religion, Affairs of State, great Perſonages, private Buſineſs of Importance, and all Caſes of Pity. Yet ſome think their Wits aſleep, when they are not darting out their Stings. But this Humour ſhould be curb'd. And, in general, a Difference is to be obſerved between what is ſalt, and what bitter. Certainly, he who has a Satyrical Vein, and makes others afraid of his Wit, had need be afraid of their Memory.

Rules for the Conduct of Diſcourſe. 3. To aſk many Queſtions is the Way to improve ones ſelf, and pleaſe others: eſpecially if the Queſtions be ſuited to the Skill and Capacity of the Reſpondent; who will thus have an Opportunity of ſhewing his Knowledge, whilſt the Queriſt gains Information. But theſe Queſtions ſhould not be troubleſome; otherwiſe the Queriſt acts the Examiner: He who would preſerve the Dignity of familiar Diſcourſe, muſt give others their turn to ſpeak. And if any one would engroſs all the Talk to himſelf, let another find Ways to break him off, and bring the reſt on; as Muſicians do with thoſe that dance too long. If you ſometimes diſſemble a Knowledge of what you are ſuppoſed to know; you ſhall another time be thought to know what you do not. A Man ſhould ſeldom ſpeak of himſelf; and then it ſhould be with Judgment. I knew a Perſon who would frequently ſay, in the way of Irony, *He muſt needs be a wiſe Man, he ſpeaks ſo much of himſelf!* There is ſcarce more than one Caſe wherein a Man may decently commend himſelf; and that is, by commending the Virtue in another, which himſelf lays claim to. Stinging Reflections ſhould be ſparingly uſed: For Converſation ought to be as a Field to walk in; not as a Road that leads home. Diſcreet Diſcourſe is better than Eloquence; and to ſpeak agreeably, is better than to affect choice Words, or a regular Order. A good continued Speech with bad Interlocution, ſhews Slowneſs; and a good Reply without the Talent of making a continued Speech, diſcovers Poverty, and the want of a grounded Knowledge. So we ſee in Brutes, thoſe that are ſloweſt in the Courſe, are nimbleſt at the Turn; as the Hare and the Greyhound. To uſe too many Circumſtances before the Matter of the Speech is enter'd upon, proves tedious; and to uſe none at all, is abrupt and diſpleaſing.

ESSAY VI. *Of* SUSPICION.

The Inconveniencies of Suſpicion. 1. SUſpicions amongſt Thoughts, are like Bats amongſt Birds; and never fly but by Twilight. Certainly they ought to be repreſs'd, or well guarded: For they cloud the Underſtanding, alienate Friends, and claſh with Buſineſs; ſo that it can neither go current nor conſtant. They diſpoſe Kings to Tyranny, Huſbands to Jealouſy, and even the prudent to Irreſolution and Melancholy.

2. They

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2. They are Defects rather of the Head than the Heart: For they enter the moſt courageous Natures; as appears by King *Henry* VII. who was both extremely ſuſpicious and courageous. But in ſuch a Compoſition they do little hurt: being here ſeldom admitted without examining into their Foundation. But in fearful Tempers they reign too much. *Is not always owing to Fear.*

3. Nothing makes a Man ſo ſuſpicious as to know little: whence the beſt Remedy againſt Suſpicion is Enquiry: For Darkneſs and Smother feed the Diſtemper. What would Men have? Do they think the Perſons they employ and converſe with are Saints, or Angels? Can we be ignorant that they purſue their own Ends; and will always have the firſt Regard to themſelves? There is therefore no better Method of moderating Suſpicions, than to provide againſt them as if they were true; yet bridle them as if they were falſe: for ſo far Suſpicion may be of uſe, as to put Men upon their Guard; that tho the thing ſuſpected were true, it ſhould not hurt them. *Its Remedies.*

4. The Suſpicions that the Mind forms to itſelf are no more than Buzzes; but thoſe kept up by the Artifice of others, or put into Mens Heads by Rumours and Whiſpers, have Stings. The direct way out of this thick Wood of Suſpicions is, a frank Declaration of them to the Perſon ſuſpected: For thus we are ſure to know more of their Juſtneſs or Unjuſtneſs, than before; and at the ſame time to render the ſuſpected Perſon more cautious of giving us farther Occaſion of Suſpicion. But this ſhould not be done to Men of baſe Natures; who, if they find themſelves once ſuſpected, will never be true. The *Italians* have a Proverb, *Soſpetto licentia fede*; as if *Suſpicion* diſſolved Fidelity: Whereas it ſhould rather provoke the ſuſpected Perſon to clear himſelf. *An Explanation to be ſought from the Perſon ſuſpected.*

ESSAY VII. *Of* CUNNING.

1. BY *Cunning* I underſtand a certain ſiniſter or crooked Wiſdom: For there is a great Difference between a *cunning Man* and a *wiſe Man*; not only in point of Probity, but alſo in point of Ability. There are thoſe who can pack the Cards, and yet not play well; and ſo ſome are good at canvaſſing and bridling of Factions, who are otherwiſe weak Men. Again, 'tis one thing to underſtand Perſons, and another to underſtand Things: For many are verſed in Mens Humours, yet uncapable of real Buſineſs; as having ſtudied Men more than Books: and ſuch are fitter for Practice than for Counſel; as excelling only in the way they have been uſed to. And becauſe theſe cunning Men are like Haberdaſhers of Small Wares, it may not be amiſs to examine their Shops. *Cunning; what.*

2. 'Tis a piece of Cunning to glance an obſerving Eye upon the Countenance of the Perſon ſpoke with; after the manner directed by the *Jeſuits*: For many prudent Men have ſecret Hearts and tranſparent Countenances. But this ſhould be done with a modeſt Dejection of the Eye by turns; as the *Jeſuits* practiſe it. *The Cunning of the Eye.*

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Cunning for procuring Diſpatch of Buſineſs.

3 Another Artifice is, when you deſire to have a Matter immediately diſpatch'd, to entertain and amuſe the Perſon with Diſcourſe upon a different Subject; that he may be thus prevented from making Difficulties and Objections. I knew a Secretary of State, who whenever he came to Queen *Elizabeth* with Bills to ſign, would firſt enter her into ſome ſerious Affairs of Government; that ſhe might be the leſs intent upon the Bills. The like Advantage may be obtained by propoſing things of a ſudden, when the Perſon applied to is in too much haſte to conſider thoroughly of them.

For quaſhing an Affair.

4. When a Man would croſs a Buſineſs which he ſuſpects might be effectually propoſed by another, he often pretends to be well affected to it; but propoſes it in ſuch a manner, as to quaſh or diſturb it.

For cauſing a Queſtion.

5. To break off in the middle of a Diſcourſe, as if a Man took himſelf up, raiſes a Curioſity in the Hearer to know further. And becauſe a thing has a greater Effect when forced out by a Queſtion, than when it is voluntarily offer'd; a Bait may be laid for a Queſtion, by an unaccuſtomed Change of the Countenance. This *Nehemiah* ſeems to have practiſed, *who had not till that time been ſad before the King.*

For relating diſagreeable Matters.

6. In the firſt relating of diſagreeable News, or Matters that may be heinouſly taken, 'tis proper to break the Ice by the Means of others, whoſe Words are of leſs weight; and reſerve the Voice of greater Authority, to come in as by chance, upon a Queſtion raiſed by the occaſion: as in the Caſe of *Narciſſus* relating to *Claudius*, the Marriage of *Meſſalina* and *Silius*.

To avoid being ſeen.

7. In Matters where a Man would not himſelf be ſeen, 'tis a point of Cunning to borrow the Name of the World; and introduce them with a *they ſay*. I knew one who, in writing of Letters, would conſtantly put the moſt material Points in the Poſtſcript; as if they were things he had almoſt forgot. I knew another, who in Converſation would paſs over the Thing he moſt intended; take his Leave; but come back again, and ſpeak of it, as if it before had ſlipt his Memory.

To gain an Opportunity.

8. Some lie in wait to be ſurpriz'd by the Perſon they have a Deſign upon; and take care to be found with a Letter in their Hand, or doing ſomewhat unuſual, in order to be queſtion'd about the Matter they would open.

To lay a Bait for one's Adverſary.

9. 'Tis a piece of high Cunning to let fall Words in one's own Perſon, on purpoſe for another to catch, and uſe to his Ruin. I knew two Competitors for the Secretary's Place in Queen *Elizabeth*'s time, who nevertheleſs kept Terms with each other, and often conferr'd upon the Subject of their Rivalſhip. At length one of them ſaid, that *to be Secretary in the Decline of a Monarchy was a tickliſh thing, and a kind of Honour he did not affect.* Theſe Words, which were enſnaringly ſpoke, the other preſently catched; and in Simplicity uſed, as his own, among his Friends. The other took hold of this, and found means to have the Queen acquainted with what his Competitor had thus given out, about the *Decline of a Monarchy*; which the Queen ſo reſented (as then thinking herſelf in the Glory of her Reign) that ſhe would never after hear of his Suit.

10. There

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10. There is a Cunning which we in *England* call the *turning of Cat in pan*; which is, when what a Man ſays to another, he pretends another had ſaid to him: and 'tis not eaſy when ſuch a Matter paſſed between two, to make it appear from which of them it originally came. *The turning of Cat in pan.*

11. There is an Artifice of glancing at others, by juſtifying ones ſelf in Negatives; as to ſay, *This I do not.* And ſome have ſuch a ready Talent at Story-telling, that there is nothing they would inſinuate, but they can wrap it up in a Tale, whereby they keep themſelves ſecure; as affirming nothing expreſly, and at the ſame time cauſe the thing they intended to be ſpread with the greater Pleaſure. *The Artifice of Story-telling.*

12. 'Tis an uſeful Cunning for a Man to couch the Anſwer he deſires in the others own Words and Propoſitions; for this brings over the other with greater Eaſe. *To procure an Anſwer in the Words of another.*

13. 'Tis ſtrange how long ſome Men will wait to ſpeak what they intend; how far they will fetch it; and how many other Matters they will beat over to come near it. This is a thing of great Patience, but of much Uſe. *The waiting an Opportunity to ſpeak.*

14. A ſudden, bold and unexpected Queſtion ſometimes ſurprizes a Perſon, and lays him open. Thus a Man who went by a falſe Name, another coming behind him and calling him by his true one, is ſaid to have forgot himſelf, and preſently look'd back. *Sudden bold Queſtions.*

15. But theſe ſmall Wares, and petty Points of Cunning, are numerous. It were proper, however, to make a Liſt of them; for nothing proves more miſchievous in States, than to have cunning Men paſs for wiſe. *A Liſt to be made of the petty Points of Cunning.*

16. There are thoſe who know the Stops and Pauſes of Buſineſs, but cannot enter the Heart of it; like ſome Houſes that have convenient Stairs and Galleries, but never a good Room. Hence ſuch Men find commodious Exits in the Concluſion of Debates; tho they are no ways able to examine and deliberate Matters. Yet they commonly take advantage of their Inability; and would be thought Genius's fitter to direct and determine, than to diſpute. And ſome depend rather upon the abuſing and tricking of others, than upon the Soundneſs of their own Proceedings. But *Solomon* ſays, *The Fool turneth aſide to Deceit, whilſt the prudent Man looketh well to his Goings.* *Some Men fitter for Cunning than real Buſineſs.*

ESSAY VIII. *Of* SELF-CUNNING.

1. THE Ant has much Self-cunning, but proves a miſchievous Thing in a Garden: and certainly Self-lovers hurt the Publick. We ſhould therefore divide equally betwixt Self-love and publick Spirit. Be true to thyſelf, but not injurious to others; eſpecially not to thy King and Country 'Tis groveling for a Man's Actions to center in himſelf. *Self-cunning not to be over indulged.*

2. It is more tolerable in Princes to refer all things to themſelves, becauſe they act in a publick Capacity; but Selfiſhneſs is highly pernicious in a Subject or Servant of the State: for all the publick Affairs that paſs through ſuch *This Cunning ſuits better with Princes than private Perſons.*

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ſuch Hands, will be bent to ſelfiſh Ends; which muſt often prove eccentrick to the Ends of the governing Power.

No prime Officers to be choſe of this Character.

3. Therefore let Princes chooſe ſuch Miniſters and Servants as are not ſelfiſh; unleſs where the Office is ſecondary. What makes the Effect more pernicious is, that it preſerves no Proportion. It is a wide Diſproportion, where the Servant's Advantage is preferred to the Maſter's; but a violent Extreme, where a ſmall Advantage of the Servant is preferred to a great one of the Maſter. Yet this is frequently the Caſe in corrupt Miniſters, Treaſurers, Ambaſſadors, Generals, and other ſelfiſh Officers and Servants; who clap a Biaſs upon the Bowl of their own petty Ends, which draws aſide their Maſters important Affairs. The Advantages ſuch Servants receive generally ſquare with the Model of their Fortunes; but the Damage they do in Exchange is according to the Model of their Maſter's Fortune. For it is the Temper of ſuch violent Self-lovers *to fire a Houſe, ſo they can but roaſt their Eggs*. Yet ſuch Miniſters often keep in their Prince's Favour, becauſe they ſtudy but theſe two Points, to pleaſe him, and profit themſelves; and they will betray his Intereſt for the Sake of either.

The Self-cunning often unfortunate.

4. Self-Cunning is a depraved Thing in many of its Branches. 'Tis the Cunning of Rats, that will leave a Houſe ſomewhat before it falls: 'Tis the Cunning of the Fox, that turns out the Badger, who made the Den: 'Tis the Cunning of the Crocodile, who weeps over his Prey: But what is moſt obſervable, extreme Self-lovers, who, as *Cicero* ſays of *Pompey*, are without a Rival in their Love, generally end unfortunate; and, as they ſacrificed to themſelves through the whole Courſe of their Lives, are at length ſacrificed by the Inconſtancy of Fortune; whoſe Wings they thought to have clipped by their hopeful Cunning.

ESSAY IX. *Of affecting the Appearance of* WISDOM.

That Men differ in point of Wiſdom.

1. IT is a receiv'd Opinion, that the *French* are wiſer than they appear; and that the *Spaniards* appear wiſer than they are: But however it be between Nations, 'tis certainly thus between Man and Man. For, as the Apoſtle ſays of Godlineſs, *having the Form of Godlineſs, but denying the Power thereof*: ſo there are certain *Solemn Triflers*, no way deſerving the Name of wiſe, that deliver Levities with Labour[t].

The Artifices of thoſe who affect to ſeem wiſe.

2. 'Tis a ridiculous thing to Men of Senſe, and a Subject fit for Satyr, to ſee into how many Shapes theſe Formaliſts will change; and what Perſpectives they uſe to make Surfaces appear as Solids. Some are ſo cloſe and ſecret as only to ſhew their Goods by a half-light; and ſeem to intimate more than they ſpeak; and when they are conſcious they talk of a Subject they do not underſtand, yet pretend to know what they may not ſafely utter. Some help their Diſcourſe with Looks and Geſtures, and would ſhew themſelves wiſe by Signs. Some affect to ſhine by talking big and peremptory, nimbly taking for granted the Things they cannot

[t] *Magno conatu magnas nugas.*

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not prove. Others will ſeem to deſpiſe, as impertinent or trifling, whatever is beyond their Sphere; and thus put off their Ignorance for Judgment. Others are never without their Diſtinctions; and generally skip over the Matter, by puzzling the Company. Such Men in Converſation commonly take the negative Side; and would raiſe a Character by ſtarting Difficulties, and foretelling Inconveniencies: becauſe, when Propoſitions are denied, there is an End of them; but if proved, freſh Work is cut out. So that this falſe Wiſdom proves the Bane of Buſineſs.

The ſeeming wiſe Men not to be truſted in ſerious Buſineſs.

3. In ſhort, no breaking Merchant, no ſecret Bankrupt has ſo many Shifts to keep a Credit, as theſe pretending wiſe Men to ſupport their darling Sufficiency. And, though ſuch Men may eaſily catch the Opinion of the Crowd; yet let them never be truſted in ſerious Buſineſs, or Affairs of Weight. Certainly Buſineſs is better conducted by Men that commit ſome Abſurdities, than by ſuch diſagreeable, empty Formaliſts.

ESSAY X. *Of* DELAYS.

The Nature of Fortune.

1. FOrtune is like the Market, where, if Men can wait a little, the Price will fall. 'Tis ſometimes like the *Sibyll*'s Offer, which firſt preſents the Commodity entire, then conſumes a Part, and ſtill keeps up the Price. For Opportunity firſt offers the Handle of the Bottle, then the Belly.

The proper Conduct in Dangers.

2. There is no greater Wiſdom than rightly to time the Beginnings of Things. Dangers are no longer light, if they once ſeem light: and more Dangers have deceived Men, than forced them. Nay, it were better to meet ſome Dangers half way, than to be perpetually enquiring after their Motions, and watching their Approach; for in watching too long, Men are apt to fall aſleep.

Dangers not to be overrated, or be provoked.

3. On the other hand, to be deceived by long Shadows, as ſome have been, when the Moon was low, and ſhone on their Enemies Back, and ſo to ſhoot off before the Time; or to provoke Dangers, by over haſtily arming againſt them, is the contrary Extreme.

The Ripeneſs of Opportunity to be ſeized.

4. The Ripeneſs or Unripeneſs of the Occaſion muſt be well conſidered; and generally 'tis beſt to commit the Beginnings of all great Actions to *Argus* with his hundred Eyes, and the Ends to *Briarcus* with his hundred Hands: firſt to watch, and then to ſpeed. *Pluto*'s Helmet, which renders the Politician inviſible, is Secrecy in Counſel, and Diſpatch in Execution. For when things are ripe for Execution there is no Secrecy comparable to Diſpatch[u].

[u] *See the Fable of* Perſeus *explained, Vol.* I. *Pag.* 64. *See alſo* ESSAY XI.

ESSAY

ESSAY XI. *Of* DISPATCH *in* BUSINESS.

Affected Diſpatch pernicious.

1. IMmature and affected Diſpatch generally proves the Bane of Buſineſs. 'Tis like what the Phyſicians call haſty Digeſtion; which fills the Body with Crudities, and the ſecret Seeds of Diſeaſes. Therefore we are not to meaſure Diſpatch by the Time beſtowed in Conſultation; but by the Progreſs made in the Buſineſs conſulted about. And as in the Courſe, it is not the large or the high Step, but the low and equable Motion of the Feet, that conſtitutes Fleetneſs; ſo in Buſineſs, the keeping cloſe to the Matter, and not greedily taking too large a Part at once, procures Diſpatch.

The falſe Diſpatch.

2. Some only affect the Appearance of doing a great deal in a little Time, or contrive falſe Periods of Buſineſs, that they may ſeem Men of Diſpatch. But 'tis one thing to ſave Time by contracting, and another by breaking off. Buſineſs treated at ſeveral Meetings, generally fluctuates, backwards and forwards, with great uncertainty. I knew a wiſe Man, who, when he found People over haſty, would conſtantly ſay to them, *Stay a little, that we may have done the ſooner.*

The true.

3. On the other hand, true Diſpatch is a valuable Thing. For Time is the Meaſure of Buſineſs, as Money is of Commodities; and therefore Buſineſs will be dear bought, where Time is too long delay'd. The *Spartans* and *Spaniards* have been remarked for Slowneſs. Let my Death come from *Spain*, ſays the Proverb; for then it will be long in coming.

To procure Diſpatch in the Relator.

4. Lend a patient Ear to the firſt Informers in Buſineſs; and rather direct them in the Beginning, than interrupt them often in the Thread of their Diſcourſe: for a Man put out of his own Method, will ramble, and prove more tedious while he recollects his Memory, than if he had been ſuffered to proceed without Diſturbance. But ſometimes the Moderator is more troubleſome than the Relator.

By cutting off ſuperfluous Speeches.

5. Repetitions generally waſte Time, which however is never ſaved more than by often repeating the State of the Queſtion; for this ſtifles many impertinent Speeches in the Birth. Prolix and florid Harangues are as unfit for Buſineſs, as a long Robe for a Race. Prefaces, fine Tranſitions, Apologies, and other perſonal Speeches are great Waſters of Time; and, tho they may ſeem to proceed from Modeſty, are in reality Oſtentation: yet beware of coming bluntly to the Matter, when there is any Obſtruction or Impediment in Mens Wills; for pre-poſſeſſion of Mind always requires a preparatory Speech, like a Fomentation to make the Unguent enter.

By a right Diſpoſal of Buſineſs.

6. Above all, Order, Diſtribution, and an apt ſingling out of Parts is the Life of Diſpatch, provided the Diſtribution be not too ſubtile; for he who does not divide, will never enter well into Buſineſs: and he who divides too much, will ſcarce come out of it clearly. To chooſe Time, is to ſave Time: for an unſeaſonable Motion is but beating the Air, and a Loſs of Time.

There

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7. There are three parts of Buſineſs; *viz.* the *Preparation*, the *Examination* or *Debate*, and the *Execution*; where, if Diſpatch is intended, let the Examination be the Work of many; but the Preparation and Execution the Work of few. *The three Parts of Buſineſs, how to be managed.*

8. To enter upon Buſineſs from ſome Scheme drawn up in Writing, generally promotes Diſpatch; for tho ſuch a Scheme ſhould be wholly rejected, yet even this affords more Direction, than to have had no definitive Scheme at all: as Aſhes are more fertilizing than Duſt[w]. *Buſineſs to proceed upon ſome Plan.*

ESSAY XII. *Of* CARES.

1. IF Cares be not moderated they fruſtrate themſelves, oppreſs the Mind, confound the Judgment, and run out into Prophaneneſs; for they ſhew that a Man promiſes himſelf a kind of Perpetuity in the Affairs of this World. But Life being ſo ſhort, we ſhould be Men of to day, and not of to morrow, and ſeize Time as it comes; leaving Futurity to be preſent in its turn. Care for immediate Things is, therefore, the principal Buſineſs of Men; and *ſufficient to the day is the evil thereof.* *Cares to be moderated.*

2. Moderate Cares, however, whether of a publick or private Nature, are not to be condemned; but they may have two Exceſſes. The *firſt* is, when our Cares are extended to too great a length, and to Times very remote; as if by our Care we could bind the divine Providence, which was always an unuſual, and reckoned an unproſperous thing, even among the Heathens: for it has generally happened, that they who attributed much to Fortune, and kept themſelves on the watch for preſent Occaſions, met with great Succeſs: whereas they who by Anxiety, and deep Forethought, truſted they had conſidered and provided for every thing, have proved unfortunate. *Two Exceſſes of Cares.*

3. The *ſecond* Exceſs is, when we dwell longer upon Cares than is neceſſary for a juſt Deliberation and Determination. For what Man can poſſibly take even ſo much Care as ſhall ſuffice to clear his own Way, or to judge that he cannot clear it; but muſt often beat over the ſame Tracks again to no purpoſe; run round in the ſame Wheel of Thought; and yet vaniſh from himſelf at laſt? And this kind of carking Care or Solliciſude, is a Thing directly contrary to all Meaſures, both divine and human. *The ſecond Exceſs.*

ESSAY XIII. *Of* HOPE.

1. 'TIS truly ſaid, that the Sight of the Eye is better than the Proſpection of the Mind; for a diſtinct and clear Perception of Particulars, puts the Underſtanding into a better Frame than progreſſive and *Hope and Fear deceitful Paſſions.*

[w] The Meaning ſeems to be, that *Particulars* are more inſtructive than *Generals*; as Duſt is a general Earth, and Aſhes a particular Species.

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endleſs Imaginations. But it is the Nature of the Mind, even in the graveſt Tempers, from a Perception of Particulars, immediately to ſtart forwards, and bound and leap, and promiſe itſelf, that every thing elſe will prove like what gives the preſent Impulſe: whence if the Senſation be of a Good, Men eaſily run out into extravagant Hopes; and if of an Evil, into extravagant Fears. But Hope and Fear are two bad Preſagers, and not to be truſted.

Hope almoſt uſeleſs in Caſes of Proſperity.

2. There is, however, ſome Uſe of Fear; as this prepares the Mind for ſuffering, and whets the Induſtry[x]. But Hope ſeems to be almoſt uſeleſs; for to what purpoſe ſerves the Anticipation of good Fortune? If the Succeſs prove leſs than was hoped, it ſeems to be rather a Loſs than a Gain; as falling ſhort of the thing expected. If the Succeſs be adequate to the Hope; yet even thus the Flower of the Benefit is cropped by Hope; and fades in the Enjoyment. Laſtly, If the Succeſs be greater than was hoped, there ſeems indeed to be ſome Advantage received; but were it not ſtill better to have had the Principal without hoping at all, than the Intereſt, by hoping too little? And this is the Operation of Hope in Matters of Proſperity.

The pernicious Effect of Hope in Adverſity.

3. In Matters of Adverſity, Hope breaks the true Courage of the Mind: for there is not always an Occaſion of hoping; and with any, even the leaſt Deſertion of Hope, almoſt the whole Support of the Mind is gone. It alſo leſſens our Dignity to bear Misfortunes by a certain Alienation and Error of the Mind; and not with Firmneſs and Strength of Judgment. 'Twas therefore wrong in the Poets to make Hope the Antidote and Mitigator of human Calamities; when in reality it rather exaſperates, multiplies, and renews them.

Mens Minds diſtempered by Hope.

4. The Generality, however, give themſelves wholly up to theſe Imaginations of Hope, and endleſs Progreſſions of the Mind; and proving unthankful for things paſt, and almoſt forgetful of the preſent, ſolely depend upon thoſe that are future; which is the worſt Diſeaſe, and maddeſt State of the Mind.

In what Caſes Hope may be allowed.

5. It may be aſked, is it not better, ſince Things are placed in Uncertainty, to expect the beſt, and rather to hope than deſpair; becauſe Hope procures the greater Tranquillity to the Mind? I anſwer, that in all Delay and Expectation, I judge a ſerene and ſteddy State of the Mind, ariſing from a due Regulation and Compoſure thereof, to be the principal Strength and Support of human Life; but reject the Tranquillity which depends upon Hope, as a weak Thing. Tho it may not be improper, from a ſound and ſober Conjecture, to preſuppoſe and foreſee both good and bad Fortune, that we may the better ſuit our Actions to the Probability of Events; provided this be made the Office of the Underſtanding and Judgment, and is attended with a juſt Sway of the Affections.

6. But

[x] ——— *Non ulla Laborum,*
O virgo, nova mi facies, inopinave ſurgit:
Omnia præcepi, atq; animo mecum ante peregi.

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6. But where is the Man whom Hope has so restrained, that when, from a vigilant and sound Use of his Understanding, he has predicted to himself the better Fortune, as the more probable; does not rest upon the Anticipation, and indulge pleasing Thoughts thereof, as so many pleasing Dreams? And this is what renders the Mind light, tumid, irresolute, and wandring: wherefore all Hope should be employed only upon a future Life in Heaven. But for this World; the purer our Sensations of the present Things are, and the freer from all Infection and Tincture of the Imagination; the more does a wiser and better Spirit forbid us to cherish any long Hopes of a Life so extremely short. *The proper Object of Hope.*

ESSAY XIV. *Of* FORTUNE.

1. ACcident and Chance have certainly a Power over the Fortunes of Men: we mean such Accidents as the Favour of the Great; Opportunity; the Death of others; Occasions suited to certain Virtues, *&c.* tho still a Man's Fortune chiefly depends upon himself. The most frequent external Cause is, that the Folly of one Man proves the Fortune of another: for we never prosper so suddenly as by the Errors of others. *Fortune often accidental.*

2. Open and manifest Virtues procure Praise; but secret and hidden ones produce Fortune. These are certain nameless Talents of extricating one's self; where there is no Stickage in a Man's Temper, but the Wheels of his Mind move along with those of his Fortune. He therefore who looks sharply and attentively, may see Fortune: for tho she be blind, yet herself is not wholly invisible. The Way of Fortune is like the *Milky-Way*; a Cluster of many small Stars, not separately visible, but luminous all together: for they are a Number of little, and scarce discernable Virtues, or rather Faculties and Habits, that render Men fortunate. The *Italians* note some of them, and such as one would little expect. When they speak of a Person whose Fortune they will answer for; they add to his other Qualities, that he has *Poco di Matto:* And certainly there are not two more fortunate Properties, than to have a little of the Fool, and not too much of the Honest. Hence extreme Lovers of their Country, or Prince, never were, nor can be fortunate: for when a Man places his Thoughts without himself, he cannot well go his own Way. *Certain Habits procure Fortune.*

3. Sudden Fortune makes Men enterprizing, and somewhat turbulent; but an exercised Fortune makes them prudent and able. Doubtless, Fortune is to be honoured and respected, tho it were only for her Daughters, Confidence and Reputation: for Felicity breeds Confidence in a Man's self, and Reputation in others towards him. *The Effects of sudden and exercised Fortune.*

4. Prudent Men, to decline the Envy which their own Virtues might occasion, attribute all to Providence and Fortune; for thus they may assume them the more freely, and with the better Grace: Besides, it adds a kind of Majesty to a Man, that he should seem to be the Care of the higher *How to decline Envy.*

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Powers. So *Cæsar* said to the Pilot in a Tempest, *Thou carriest* Cæsar *and his Fortune:* So *Sylla* chose the Name of *Happy*, not of *Great*. And it has been observed, that those who openly ascribed too much to their own Wisdom and Policy, have ended unfortunate.

A smooth Fortune procurable.

5. Certainly, as *Plutarch* observes of *Timoleon*, the Fortunes of some Men are like *Homer*'s Verses, which run smoother than those of other Poets: and to effect this, in great measure, is doubtless in a Man's own Power[y].

ESSAY XV. *Of* EXPENCE.

Expences how to be regulated.

1. THE Use of Riches is Expence; and the End of Expence is Honour and worthy Actions: So that extraordinary Expence must be limited by the Worth of the Occasion: for voluntary Poverty should be sometimes suffered for the sake of ones Country; as well as for the Kingdom of Heaven. But ordinary Expences ought to be limited by a Man's Estate, and so regulated as to keep within the Returns, and not be subject to the Fraud and Abuse of Servants; but the Bills to fall short of the Estimation. Certainly, if a Man would keep even hand, his ordinary Expences should be but half his Income[z]; and if he would grow rich, but a third.

Accompts to be inspected.

2. 'Tis no Meanness for the greatest Men to inspect their own Accompts. Some decline it, not so much out of Sloth, as Fear to find themselves bad: but Wounds are not cured without searching. He who cannot be his own Steward, should make a prudent Choice of the Servants he employs, and change them often; for new ones are more timorous, and less subtile. He who looks into his Accompts but seldom, should, as much as possible, bring both his Income and Expence to Certainties.

Expences to be balanced.

3. If a Man be expensive in one way, he should be saving in another: Thus, if he exceed in Diet, let him save in Apparel: If he be profuse in the Hall, let him spare in the Stable, *&c.* For to be profuse in all kinds of Expence, can scarce end but in Ruin.

The Way of redeeming a mortgaged Estate.

4. A Man may as well hurt himself by clearing an incumber'd Estate too soon, as by letting it run too long: for hasty selling is commonly as disadvantageous as the paying of Interest. Besides, he who redeems all at once, is in danger again; because now finding himself released, he will be apt to return to his former Customs: But he who clears by degrees, thus procures a Habit of Frugality, and at once redeems both his Mind and Estate. Certainly, he who would repair a decay'd Estate, should not despise even the smallest Things: and in general, 'tis less dishonourable to abridge petty Expences, than stoop to petty Gains.

5. A

[y] See this Subject farther prosecuted in the *De Augment. Scientar.* §. XXV.

[z] Reserving the other against Contingencies, Losses, Sickness, *&c.*

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5. A Man ſhould be very cautious of beginning thoſe Expences, which if once begun will continue; but may be more liberal on ſuch Occaſions as are not likely to return [a]. *Where Liberality may be well placed.*

ESSAY XVI. *Of* USURY; *or lending upon Intereſt.*

1. THERE are many witty Invectives againſt Uſury. But ſince there is a Neceſſity of Borrowing and Lending; and Men are ſo hard of Heart as not to lend *Gratis*; it follows that Uſury muſt be permitted. There are but few who have treated ſolidly and uſefully of this Subject. The beſt way is, to ſet before us the Conveniencies and Inconveniencies of Uſury; that the Good may be either weighed or ſeparated: And again, to beware that whilſt we receive a Benefit from Uſury, we be not led into Snares. *The beſt Way of underſtanding the Nature of the Subject.*

2. The *Inconveniencies* of Uſury are theſe: (1.) It leſſens the Number of Merchants; becauſe were it not for this lazy Trade of Uſury, Money would not lie ſtill, but be chiefly employ'd in Trade; which is the *Vena Porta* of Wealth to a State. (2.) It impoveriſhes the Merchant: for, as the Farmer cannot cultivate his Ground ſo well, if his Rent be large; ſo the Merchant cannot trade ſo well, if he pays great Intereſt for Money. (3.) It leſſens the Cuſtoms; which ebb or flow with Commerce. (4.) It brings the Coin of the Kingdom into a few Hands: for the Uſurers Profit being certain, and that of others uncertain, at the End of the Game moſt of the Money will be in the Box; whereas it is a Maxim, that a State always flouriſhes moſt when Money is not hoarded, but ſpread. (5.) It ſinks the Price of Land: for Money is either employ'd in Trade or Purchaſing; but Uſury ſeems to intercept them both. (6.) It cramps all Induſtry, Improvement, and new Inventions; wherein many would be employ'd, if it were not for this Slug. (7.) And *laſtly*, it is the Canker and Ruin of many Eſtates; which in time occaſions a national Poverty. *The* Diſadvantages of Uſury.

3. The *Advantages* of Uſury are theſe: (1.) However in ſome Reſpects it may hurt, yet in others it promotes Trade; the greateſt part whereof is carried on by young Merchants, upon borrowing at Intereſt: whence if the Uſurer either call in, or refuſe his Money, a great Stagnation of Trade will preſently enſue. (2.) If this eaſy borrowing upon Intereſt did not relieve Men in their Neceſſity, they would ſoon be reduced to the utmoſt Extremities; and forced to ſell their Lands or Goods at an under Price: And thus, whereas Uſury does but gnaw upon them, theſe haſty Sales would devour them. Mortgaging or Pawning will here afford no great Relief: for either Men will not take Pledges without Uſe; or if they do, will act to the Rigour, and take the Forfeit, in caſe the Payment be not punctual. I remember a hard-hearted rich Man, who uſed to ſay; *The Devil take this Uſury; it keeps us from Forfeitures of Mortgages and Bonds.* (3.) *Laſtly*, 'Tis Vanity to conceive there ſhould be an eaſy borrowing *Its* Advantages.

[a] See the Eſſay upon *Riches*; *viz.* ESSAY XVII. of the preſent Sect.

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rowing without Uſe: and 'tis impoſſible to conceive the numberleſs Inconveniencies that will enſue, if Borrowing be cramped. Therefore to think of totally aboliſhing Uſury, is a Notion only fit for *Utopia*: for all States tolerate the Thing, under one rate of Intereſt or other.

Its Regulation, by introducing two ſorts.

4. It appears upon thus balancing the Conveniencies and Inconveniencies of Uſury, that there are two things to be reconciled; the one, that the Teeth of Uſury be ground, that they bite not too much: the other, that a Way be opened for inviting money'd Men to lend the Merchant, for the continuing and quickening of Trade. And this cannot be effected without introducing two ſorts of Uſury; a leſs and a greater: For if you reduce Uſury to one low Rate, this will indeed eaſe the common Borrower; but the Merchant will be to ſeek for Money. And the Trade of the Merchant being the moſt gainful, might bear a higher Intereſt than other Contracts.

The firſt.

5. To anſwer both Intentions, there may be two Rates of Uſury; the one free for all; the other under licence, and reſtrained to certain Perſons, and certain Places of great Commerce. Firſt, therefore, let Uſury in general be reduced to Five *per Cent.* Let this Rate be proclaimed current; and let the State renounce all Penalty for the ſame. This will preſerve Borrowing from any general Stop or Difficulty; eaſe numerous Borrowers; and in good meaſure raiſe the Price of Land; becauſe Land in *England*, at ſixteen Years Purchaſe, will yield above Six *per Cent.* whereas the abovementioned Rate of Intereſt yields but Five. Laſtly, This will encourage Induſtry, and the Diſcovery of uſeful Improvements; becauſe many will rather venture this Way, than take up with Five *per Cent.* eſpecially as having been uſed to greater Profit.

The ſecond.

6. Secondly, Let there be certain Perſons licenſed to lend to known Merchants, and no others whatſoever; and this under the following Cautions: (1.) Let the Intereſt be ſomewhat lower than that they formerly paid; whence all Borrowers, as well Merchants as others, will be eaſed by this Reformation. (2.) Let the State be paid ſome ſmall Acknowledgment for each Licence; and the reſt go to the Lender: for if the Diminution be but ſmall to the Lender, he will not be diſcouraged from lending. Thus, if he before took Ten or Nine in the Hundred, he will ſooner deſcend to Eight than give over his Trade of Uſury; and change Certainty for Hazard. (3.) Let there be no determinate Number of theſe licenſed Lenders, but let them be reſtrained to certain principal Cities and Towns of flouriſhing Trade: for then they will have no Opportunity of lending, under the Pretext of LICENCES, other Mens Money inſtead of their own: nor will the licenſed Rate of Nine or Eight thus ſwallow up the general Rate of Five; ſince no Man will chooſe to lend his Money far off, nor truſt it in unknown Hands.

An Objection to the Propoſal anſwered.

7. If it be objected that this Scheme would authorize Uſury, which before was in ſome Places only permiſſive; I anſwer, that 'tis better to mitigate Uſury by Declaration, than ſuffer it to rage by Connivance.

ESSAY

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ESSAY XVII. *Of* RICHES.

1. RICHES may be aptly termed the Baggage of Virtue: for Baggage is to an Army, what Riches are to Virtue; neceſſary, but cumberſome; and cannot be left behind, tho they hinder the March; and even frequently loſe or delay the Victory. Great Riches are of no uſe but to expend; the reſt is Imagination. *Solomon* ſays, *Where much is, there are many to conſume it; and what hath the Owner, but the ſight of it with his Eyes?* The Poſſeſſion of Riches gives no ſenſible Pleaſure to the Poſſeſſor: there is indeed a Care to preſerve, a Power to beſtow, or a Reputation and a Pride to poſſeſs them; but no ſolid Uſe to the mere Poſſeſſor. What feign'd Prices are ſet upon Gems and Rarities! What empty Projects are enter'd upon, out of pure Oſtentation, to make the World believe there is ſome Uſe of Riches! But it may be ſaid, their Uſe principally appears in this, that they free the Poſſeſſor from Danger and Trouble; according to the Saying of *Solomon*, *Riches are as a ſtrong hold in the imagination of the rich man:* But *Solomon* prudently adds, they are ſo in Imagination, not in Fact: for certainly more Men have been enſnared, than redeemed by their Riches. *Riches the Baggage of Virtue.*

2. Endeavour not to raiſe immenſe Riches, but ſuch as may be procured juſtly, uſed ſoberly, diſtributed chearfully, and loſt contentedly: yet have no monkiſh Contempt of them; but diſtinguiſh betwixt *procuring Wealth with an avaritious View, and a View to the doing of Good:* Hearken alſo to *Solomon*, and beware of growing rich too ſuddenly. The Poets feign, that when *Plutus*, which denotes Wealth, is ſent from *Jupiter*, he limps and goes ſlow; but when ſent from *Pluto*, he runs, and is ſwift of foot: intimating that Riches procured by laudable Means and juſt Labour, advance ſlowly; but coming by *Death*, that is by Will, Inheritance, *&c.* fall precipitantly. *Cautions againſt growing rich too ſoon.*

3. The Ways to grow rich are various; but moſt of them unfair: Parſimony may be accounted one of the beſt, tho not entirely innocent; becauſe it interferes with the Works of Bounty and Charity. Agriculture ſeems the moſt natural Way of obtaining Riches; but 'tis ſlow: Yet when Men of Fortune ſtoop to Farming and Huſbandry, they often grow immenſely rich. I knew an *Engliſh* Nobleman, who had the largeſt Returns from Country Affairs, of any Subject in my time. He was rich in Herds, rich in Flocks, Woods, Coals, Corn, Lead-Mines, Iron-Mines, and many other matters of Huſbandry. So that the Earth was like the Ocean to him, perpetually importing Commodities. *The Ways of acquiring Riches.*

4. It was well obſerved by a Perſon upon himſelf, that with great Difficulty he procured a ſmall Eſtate, and with great Eaſe a large one. For when a Man's Stock is ſo great, that he can wait the Advantage of the Market, and make ſuch Purchaſes as are too large for moſt other Purſes, yet. *Eaſy to raiſe a great Eſtate when a ſmall one is acquired.*

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yet remain Partaker of the Induſtry of the poorer ſort; he cannot fail of becoming extremely rich.

The honeſt and diſhoneſt Profits.

5. The Profits ariſing from the ordinary Trades and Profeſſions, are doubtleſs honeſt, and increaſed chiefly by two things; Diligence and a Character for fair dealing. But the Gains ariſing from large Contracts are generally of a more dubious Nature; as for example, when a Man watches to take the Advantage of others Wants and Neceſſities; bribes Servants to the Prejudice of their Maſters; craftily prevents the better Bidders; with the like fraudulent and culpable Practices.

Jobbing.

Partnerſhip.

Uſury.

6. Purchaſing with a Deſign to vend again, commonly grinds on both ſides; and oppreſſes as well the firſt Seller as the ſecond Buyer. Partnerſhips are very enriching, if the Perſons concerned be well choſen. Uſury is one of the ſureſt Means of Gain, tho one of the worſt; as that whereby a Man eats his Bread *in the Sweat of another's Brow*; and keeps the Plough going on *Sundays*. But tho it be certain, yet it has its Flaws: for Scriveners and Brokers, to ſerve their own Turns, will ſometimes ſtrongly recommend unſafe Borrowers.

Inventors.

7. To be the firſt in an Invention, or a Privilege, ſometimes procures an Inundation of Wealth; as happen'd to the firſt Sugar-Baker in the *Canaries*. Therefore if a Man, like a ſkilful Logician, can add *Judgment* to *Invention*, he may certainly effect great things; eſpecially if the Times be ſuitable.

Venturers.

8. He who depends entirely upon certain Gains, will ſcarce ever become rich: on the other hand, he who puts all to the Riſk, will hardly eſcape Ruin. It is therefore proper to back Ventures with Certainties, that may balance Loſſes.

Monopolies.

9. Monopolies for Reſale, where not prohibited by Law, are a ready Road to Riches; eſpecially if the Monopolizer can foreſee what Commodities will come in requeſt; and ſo provide himſelf with them beforehand.

Poſts of Honour.

Poaching for Executorſhips.

10. To grow rich in the Service of Princes, or Nobles, is honourable; but if by means of Flattery, and other ſervile Arts, it may be accounted a baſe Way. But fiſhing for Legacies and Executorſhips, is yet worſe; as this requires a Submiſſion to meaner Perſons.

Riches neither to be deſpiſed, nor niggardly uſed.

11. Give no Credit to thoſe who ſeem to deſpiſe Riches; for they deſpiſe them only becauſe they deſpair of them: and none prove more penurious when they grow rich. Be not penny-wiſe: Riches have Wings, and ſometimes fly away of themſelves; ſometimes they muſt be let go to bring in more.

Riches how to be diſpoſed of.

12. Men, at their Death, bequeath their Riches either to publick Uſe, or elſe to their Children, Relations, and Friends; in either Caſe moderate Portions proſper beſt. A great Eſtate left to an Heir, is as a Call to all the Birds of Prey about him; if he be not ripe both in Years and Judgment. In like manner, great Gifts and magnificent Foundations for publick Uſe, are as Sacrifices without Salt; and but the painted Sepulchres of Alms; which will ſoon putrefy and corrupt inwardly. Let Gifts therefore be rated,

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rated, not according to Largeneſs, but Uſe; and reduced to a proper Meaſure. Neither let Charities be deferr'd till Death: for when juſtly conſidered, this is certainly to be liberal, not of our own, but another's.

ESSAY XVIII. *Of* NATURE, *and natural Diſpoſitions in Men.*

1. NAture is often eclipſed, ſometimes conquered, but ſeldom extinguiſhed. Force makes her more violent in the Recoil; Doctrine and Precept check the natural Affections; but Cuſtom alone is that which perfectly ſubdues and alters Nature. *Nature only ſubdued by Cuſtom.*

2. He who would conquer his Nature, ſhould ſet himſelf neither too great, nor too ſmall Taſks: in the former Caſe he would be diſcouraged by frequent Failures; and in the other his Progreſs would be ſlow, tho he often prevailed. At firſt let him practiſe with Helps; as young Swimmers do with Bladders: but after a time, practiſe with Hindrances; as Dancers do with heavy Shoes. For it always gives Perfection to have the Exerciſe harder than the ordinary Uſe. *How the Conqueſt is to be obtained over Nature.*

3. When Nature is powerful, and therefore the Victory difficult, the Procedure muſt be gradual: for example, (1.) By ſtopping Nature for a while; like him, who in his Paſſion would repeat the Letters of the Alphabet, before he did any thing elſe. (2.) By moderating Nature, and bringing her a Step lower; as if a Perſon, to conquer his Love for Wine, ſhould firſt ſink from Bumpers to half Glaſſes; and by Degrees totally diſcontinue the Uſe of it: But if a Man has the Reſolution and Strength of Mind to free himſelf at once; this were the better Way[a]. Nor ſhould the ancient Rule be rejected, to bend Nature, like a Wand, to the contrary Extreme, in order to bring her ſtrait; ſuppoſing the contrary Extreme tends not to Vice. *How when Nature is ſtrong.*

4. But let no Man force a Habit upon himſelf, by an uninterrupted Endeavour, without ſome Intermiſſions. For the Pauſe renews and enforces the new Onſet: and if a Beginner be in continual Exerciſe, he will practiſe his Errors as well as his other Acquirements; and thus procure one Habit of both: and there is no Remedy for this, but by ſeaſonable Intermiſſions. *Intermiſſions to be uſed along with Endeavours.*

5. Again, let no Man too far truſt his Victory over his own Nature: for Nature will lie long buried, and yet revive upon the Temptation. *Æſop*'s Damſel, transformed from a Cat, ſat very demurely at the Table, till a Mouſe ran before her. Therefore let a Man either wholly avoid the Occaſion; or offer himſelf often to it, that it may move him the leſs. *Victory over Nature not to be truſted.*

6. Every ones natural Diſpoſition is beſt diſcovered, (1.) By familiar Acquaintance; for here there is no Affectation. (2.) In Paſſions; be- *Mens natural Temper how diſcovered.*

[a] *Optimus ille animi vindex, laedentia Pectus*
Vincula qui rupit, dedoluitque ſemel.

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cauſe theſe throw off all regard to Rules and Precepts: And, (3.) In new and extraordinary Caſes; becauſe here Cuſtom forſakes us.

The natural Temper to be ſuited with the Life.

7. They are happy whoſe natural Diſpoſitions ſuit with their Profeſſions, or Ways of Life; otherwiſe they may truly ſay, with the Pſalmiſt, *Multum incola fuit anima mea*; as converſing in things they do not affect.

Studies againſt the Inclination to be appointed.

8. In Studies, let a Man have ſet Hours for thoſe Subjects, which are contrary to his natural Inclination; but for thoſe agreeable to his Nature, he need appoint no fixed times; becauſe his Thoughts will ſpontaneouſly fly to them, as other Studies and Buſineſs give leave.

Every Man's Nature affords Herbs or Weeds.

9. Every Man's Nature readily ſprouts into Herbs or Weeds: let him therefore ſeaſonably and diligently water the one, and pluck up the other.

ESSAY XIX. *Of* DEFORMITY.

Deformed Perſons how revenged of Nature.

1. DEformed Perſons are generally revenged of Nature: for as Nature has been unfavourable to them; ſo are they unfavourable to Nature; being moſt of them without *natural Affection*.

Deformity not to be conſidered as a Sign, but a Cauſe.

2. Certainly there is a Conſent between the Body and the Mind; and where Nature errs in the one, ſhe ventures in the other. But ſince Man has a Choice as to the Frame of his Mind, and lies under a Neceſſity as to the Structure of his Body; the Stars of natural Inclination are ſometimes obſcured by the Sun of Virtue and Diſcipline. Whence it were proper to conſider Deformity, not as a Sign, which is ſometimes fallacious; but as a Cauſe which ſeldom fails of the Effect.

Why deformed Perſons are bold.

3. Whoever has any thing in his Perſon to occaſion Contempt, has a perpetual Spur within him, to vindicate himſelf from it: whence deformed Perſons are extreme bold; at firſt in their own Defence, as being expoſed to Scorn: but in time this turns to Habit.

Induſtrious.

4. Deformity alſo whets Induſtry; eſpecially that of watching and obſerving the Defects and Weakneſs of others; to furniſh themſelves with a Reply.

The Advantages of Deformity.

5. Again, Deformity allays Suſpicion and Jealouſy in Superiors; who conſider the Deformed as Perſons they may at pleaſure deſpiſe. It likewiſe lays their Rivals and Competitors aſleep; who never ſuſpect ſuch Perſons ſhould be promoted, till they ſee them in poſſeſſion. So that, to conſider the Matter cloſely, Deformity in a great Genius is a means of riſing.

Why Eunuchs and deformed Perſons are employed by Princes.

6. Kings anciently, and to this Day in certain Empires, put great Confidence in Eunuchs; becauſe they who are envious towards all, will be more faithful and devoted to one: Yet they truſt them rather as good Spies and Whiſperers, than as good Magiſtrates and publick Miniſters. And the Caſe is much the ſame in deformed Perſons.

Whence deformed Perſons ſometimes excel.

7. The Rule above laid down holds good; and the Deformed, if Men of Spirit, will do their utmoſt to free themſelves from Scorn and Contempt:

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tempt: and this can only be effected by Virtue or Malice. Whence it is no wonder they ſhould ſometimes prove extraordinary Perſons; ſuch as were *Ageſilaus*, *Zanger* the Son of *Solyman*, *Æſop*, *Gaſca* Preſident of *Peru*; to whom might be added *Socrates*, and many more.

ESSAY XX. *Of* BEAUTY.

1. VIrtue, like a rich Gem, is beſt when plain ſet; and certainly appears to advantage in a Body that is comely, tho without delicate Features; or that has rather Dignity of Preſence, than Beauty of Aſpect. 'Tis rare that very beautiful Perſons are highly virtuous; as if Nature endeavoured to commit no groſs Errors, rather than to produce any thing perfect. Whence the Beautiful, tho agreeable in Company, are but low in Sentiments; and ſtudy Gentility rather than Virtue. But this does not always hold; for *Auguſtus Cæſar*, *Titus Veſpaſian*, *Philip le Belle* of *France*, *Edward* the Fourth of *England*, *Alcibiades* of *Athens*, and *Iſmael* the Sophy of *Perſia*, were very great Men, and yet extremely beautiful. *Great Virtue ſeldom joined with great Beauty.*

2. In Beauty, that of Make is greater than that of Complexion; and a decent and graceful Play of the Face, and Motion of the Body, greater than that of Make. That is the beſt Part of Beauty which a Picture cannot expreſs; nor even the Life itſelf at the firſt Sight. There is no exquiſite Beauty without ſome Irregularity in the Proportion. It is hard to ſay, whether *Albert Durer* or *Apelles* was the greater Trifler; the firſt for attempting to draw a Man by Geometrical Proportions; the other for taking the beſt Features from ſeveral Faces, in order to form one that ſhould be excellent. Such Pictures, I conceive, could pleaſe none but the Painter. A Painter, I allow, may draw a more beautiful Face than ever Life afforded; but then he muſt do it by a kind of Felicity, or Chance, (as Muſicians play their Voluntaries) and not by Rule. There are Faces which, if examined Feature by Feature, ſcarce afford a good one; yet prove agreeable all together. *The Eſſentials of Beauty.*

3. If Beauty principally conſiſt in decent Motion, no wonder that elder Perſons ſhould ſometimes appear more amiable than the younger[c]: for Youth can never be graceful in all Reſpects, otherwiſe than by Curteſy; and allowing the want of Years to balance the want of Decorum. *Why Perſons of middle Age are ſometimes more beautiful.*

4. Beauty is like Summer Fruit, eaſily corrupted, and not laſting. It often renders Youth diſſolute, and Age penitent; but if well placed, it makes Virtues ſhine, and Vices bluſh. *The Advantages and Diſadvantages of Beauty.*

[c] *Pulchrorum autumnus pulcher.*

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ESSAY XXI. *Of the* RULES *of* HEALTH.

1. THERE is a Prudence in the Management of Health, beyond the Rules of Phyſick. Every Man's own Obſervation of what he finds good, and what hurtful to the Body, is the beſt Means to preſerve Health.

2. It is a ſafer Concluſion to ſay, this I have found prejudicial, therefore I will leave it off; than to ſay, this has not hurt me, therefore I may uſe it. For the Vigour of Youth covers many Exceſſes, which Age muſt feel the Effects of.

3. Diſcern the Approach of Years; and think not to continue in the ſame Courſe always: for there is no fighting againſt Age.

4. Beware of a ſudden Change in any capital part of Regimen; and if Neceſſity require it, fit the other Parts to the Change. For it is a Secret both in Nature and Policy, that many things may be ſafer changed than a ſingle great one.

5. Let the Cuſtoms of Diet, Sleep, Exerciſe, Cloathing, Habitation, and the like, be examined; and if any thing is judged hurtful, try to diſcontinue it by degrees: but return to it again if any Inconvenience enſue upon the Change; for it is hard to diſtinguiſh what is good, and wholſome in general, from that which ſuits a particular Conſtitution.

6. To be unbent and chearful at Hours of Meat, Sleep and Exerciſe, is one of the beſt Precepts for prolonging Life.

7. As for Paſſions of the Mind and Studies; avoid Envy, anxious Fears, ſtifled Anger, ſubtile and knotty Enquiries, Joys and Exhilarations in Exceſs, and deep Sadneſs uncommunicated. On the other hand, entertain Hope; Mirth rather than Joy; Change of Pleaſures rather than Satiety; Admiration, and therefore Novelties; Studies that fill the Mind with gay and illuſtrious Objects; *viz.* Poetry, Hiſtory, the Excurſions of Nature, *&c.*

8. Wholly to abſtain from Phyſick in Health, will make it too unſuitable to the Body in Sickneſs; and if render'd familiar in Health, it will work no extraordinary Effect in Sickneſs.

9. Rather uſe appropriated Diets at certain Seaſons, than frequent Phyſick; except it be grown into a Cuſtom: for ſuch Diets alter the Body more, and diſturb it leſs.

10. Deſpiſe no new and unuſual Accident in the Body; but take Advice upon it.

11. In Sickneſs, let Health be the principal Care; and in Health, Action and Exerciſe; without being over delicate and tender: for thoſe who render their Bodies hardy in Health, may in moſt Diſeaſes that are not acute, be cured by an exact Diet and Regimen, without much Phyſick.

12. *Celſus*

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12. *Celſus* could never have given that excellent Rule of his, as a Phyſician, had he not alſo been a wiſe Man. He adviſes it as a Secret for preſerving Health and lengthening Life, to vary, and ſometimes interchange Contraries; always inclining to the more benign Extreme: Thus for example, to uſe a ſpare and a full Diet, but oftener the latter; Watching and Sleeping, but rather Sleeping; Sitting and Exerciſe, but rather Exerciſe; and the like. For thus Nature may be at once recruited and ſtrengthen'd.

13. Some Phyſicians are ſo indulgent to the Humour of their Patients, as not to purſue the true Cure of the Diſeaſe; whilſt others proceed ſo regularly, ſtrictly, and according to Art, in the Cure of the Diſeaſe, as not ſufficiently to regard the State and Condition of the Patient. Chooſe a Phyſician therefore of a middle Temper; or if this cannot be found in one, join two Phyſicians together, or one of either ſort; calling in as well the beſt acquainted with your Conſtitution, as the beſt experienced in his Art.

ESSAY XXII. *Of* TRAVELLING.

1. TRavelling is a part of Education in young Men; and in the elder a part of Experience. He who goes into a foreign Country before he has made ſome Progreſs in the Language, goes to School; not to travel. I approve that young Men ſhould travel under the Direction of ſome Tutor, or experienced Servant, who underſtands the Language, and has been in the Country before; ſo as to inſtruct his Pupil what deſerves to be there ſeen and known; what Friendſhips and Familiarities are to be contracted; and laſtly, what Studies or Exerciſes flouriſh in the Place: Otherwiſe young Men will travel hood-wink'd, and ſee little. *Young Men to travel under Tutors.*

2. 'Tis ſtrange, that in Voyages, where nothing appears but Sky and Sea, Men ſhould keep Diaries; yet generally omit them in Travels, where ſo much is to be obſerved: as if accidental things were fitter to be regiſtered than Matters of fixed and certain Obſervation. Let Diaries therefore be here brought into Uſe. *Diaries to be kept of Travels.*

3. The things to be ſeen and obſerved in Travelling, are the Courts of Princes, eſpecially when they give Audience to foreign Ambaſſadors; the Courts of Juſtice, whilſt they ſit, and hear Cauſes; Eccleſiaſtical Conſiſtories, Churches, and Monaſteries, with their Monuments; the Walls and Fortifications of Cities and Towns; Havens and Harbours; Antiquities and Ruins; Libraries, Colleges, Diſputations and Lectures; Shipping; Palaces, and Gardens of State and Pleaſure; Armories, Arſenals, Magazines, publick Vaults, and Granaries; Exchanges, and the Places of publick Concourſe; Store-houſes; Exerciſes of Horſemanſhip; Fencing; the Exerciſes of the Soldiery, and the like. To theſe we add the Plays whereto the better ſort of Perſons reſort; Repoſitories of Jewels and Robes; Cabinets, Curioſities, Rarities; and, to conclude whatſoever is celebrated: *The things to be obſerved in Travelling.*

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celebrated or remarkable in the Place. And after all the Things of this kind, the Tutors and Servants above-mentioned ought to make diligent Enquiry. As for Triumphs, Maſks, Feaſts, Weddings, Funerals, capital Executions, and the like, Men need not be put in mind of them; tho theſe are not to be neglected.

How to travel to advantage.

4. If young Men would reduce the Fruits of their Travels into a ſmall Compaſs, and collect much in a ſhort time; let them, (1.) acquire ſome knowledge of the Language before they ſet out. (2.) Chooſe a Servant or Tutor, that knows the Country well. (3.) Procure ſome Map, or Book, that deſcribes the Country; which will ſerve as a Key to Enquiry. (4.) Keep a Diary. (5.) Not ſtay long in any one City or Town, tho more or leſs as the Place deſerves, but by no means long. (6.) Change their Lodgings frequently in the ſame City or Town, from one part to another; for this is attractive of large Acquaintance. (7.) Avoid aſſociating too much with their own Countrymen; and eat at thoſe Ordinaries where the beſt Company of the Natives meets. (8.) Let them upon Removes procure Letters of Recommendation to ſome Perſon of Eminence, reſiding in the Place they remove to; for procuring his Favour and Aſſiſtance in any Matters deſired to be ſeen or known. And thus may Travelling be abridged to Advantage.

The Acquaintance to be made.

5. As for the Acquaintance and Friendſhips to be contracted in Travelling; the moſt uſeful kind is that of the Secretaries, and neareſt Servants of Ambaſſadors: for thus by Travelling in one Country, the Knowledge and Experience of many may be gained. A Traveller alſo ſhould viſit the eminent Perſons in all kinds, whoſe Names are famous abroad; in order to obſerve how far the Life agrees with Report.

Quarrels to be avoided.

6. Quarrels, and private Animoſities, muſt be diſcreetly and carefully avoided. Theſe commonly ariſe about Miſtreſſes, Healths, Precedency, and Words of Reproach. And let a Man beware of keeping Company with the Paſſionate and the Quarrelſome; who will otherwiſe engage him in their own Quarrels.

The Conduct to be obſerved after returning.

7. When our Traveller returns home, let him not wholly leave foreign Countries behind him; but preſerve and cultivate, by Letters, the Friendſhip of the more worthy of thoſe with whom he contracted a Familiarity abroad. And let his having travelled rather appear in his Diſcourſe, than in his Clothes or Geſture. In his Diſcourſe, likewiſe, let him rather endeavour at ſolid Anſwers, than give into the Vein of Story-telling. Let him alſo ſhew that he has not changed the Manners of his own Nation for thoſe of another; but only ſtuck a few foreign Flowers among the Cuſtoms of his native Country.

ESSAY

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ESSAY XXIII. *Of* BUILDINGS.

1. HOuſes are built to live in, not to look at: therefore let Convenience here take place of Beauty; unleſs when both may be had. We leave the pompous Houſes, for Beauty only, to the enchanted Palaces of the Poets; who raiſe them with little Expence. *Convenience the principal End of Building.*

2. He who builds an elegant Houſe with a bad Situation, commits himſelf to Priſon. I call that a bad Situation, not only where the Air is unwholſome; but likewiſe where it is unequal: as in the Caſe of Houſes built upon an Eminence, ſurrounded, like a Theatre, with higher Hills; where the Heat of the Sun is kept in, and the Wind collected as into Channels, running with different Streams; ſo as to cauſe as ſudden and great Diverſities of Heat and Cold, as would be felt in ſeveral different Places. *A proper Situation to be choſe.*

3. Nor is it any unfavourable Circumſtance of the Air alone, that makes a bad Situation; but bad Markets, bad Roads, and bad Neighbours; the Want of Water, Fewel, Shade and Shelter; the Want of Fertility or Mixture of Soil of ſeveral kinds; the Want of Proſpect; the Want of level Grounds and Places adjacent for Hunting, Hawking, and Horſe-Racing; the lying too near the Sea, or too remote from it; the Want of navigable Rivers, or the Inconvenience ariſing from their overflowing; the being at a diſtance from large Cities, which may hinder Buſineſs; or elſe too near them, which conſumes Proviſions, and makes all Commodities dear; the Neceſſity of having too much Land lying together; or elſe too little, ſo as to be cramped and confined; all which Inconveniencies I enumerate, not as if any Houſe could be free from them all; but that as many of them as poſſible may be avoided: and again, that if any Gentleman builds himſelf ſeveral Seats, he may manage ſo as to have thoſe Conveniencies in one, which are wanting in another. It was a proper Anſwer of *Lucullus* to *Pompey*, who upon viewing the magnificent and luminous Rooms and Galleries in one of *Lucullus*'s Palaces, cry'd out, *An excellent Seat for the Summer; but how do you endure the Winter? Lucullus* replied, *Do you think I have not the Prudence of Birds, who ſome of them change their Habitation towards Winter?* *The Things included under bad Situation.*

4. We now paſs from the Situation to the Houſe itſelf; endeavouring in this Eſſay to imitate *Cicero*, who wrote certain Books upon *Oratory*; and one which he called the *Orator:* in the former whereof he delivered the Precepts of the Art; and in the latter its Perfection. We therefore next proceed to deſcribe a *Palais Royal*; and exhibit a kind of Model thereof: for it is ſtrange to ſee in *Europe* ſuch vaſt Piles of Building, as the *Vatican*, *Eſcurial*, and ſome others; yet ſcarce a very magnificent Room in them. *The Model of a Royal Palace propoſed.*

5. And this we lay down as a Foundation, that there can be no perfect Palace without two Parts; one for the Banquet, as is mentioned in the Book of *Heſter*; and another for the Houſhold: the firſt for Feaſts, Shews, *A perfect Palace to have two Parts joined by a Tower.*

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Shews, and Magnificence; the ſecond for Habitation. I mean that theſe two Parts be built not as Sides, but as Fronts; and to be uniform without, tho differently partitioned within: And again, to be joined by a lofty and magnificent Tower, in the middle of the Front.

A Banquet Part.

6. On the Banquet Part, let there be only one Room above Stairs, fifty Foot high at the leaſt; and under it another, of the ſame length and breadth, for conveniently receiving the Machines, Decorations, Dreſſes, and the Actors themſelves, whilſt they get ready at the Times of publick Entertainments.

and a Houſhold Part.

7. Let the Houſhold Part be divided chiefly into a large and ſtately Hall, and a Chapel; not running however the whole length of this Part; but to have at the farther end two Parlours, one for Winter, and one for Summer: and under all theſe, except the Chapel, let large Cellars be ſunk to ſerve for Privy-Kitchens, Larders, Pantries, and the like.

The Structure of the Tower and Stairs.

8. Let the Tower be raiſed two Stories (each of them fifteen Foot high) above the two Wings of the Front; and be flat-leaded, and railed at the top, with Statues interpoſed. Let the Tower alſo be divided into Lodging-Rooms, at Diſcretion. The Stairs are to be wide, winding, divided into ſixes, and on both ſides adorned with Images of gilt Wood, or at leaſt of a braſs Colour; and to have a ſpacious Landing-Place at the top. But in this Caſe let none of the adjacent lower Rooms be made a Dining-place for Servants; otherwiſe the Steam of the Meat will aſcend as it were through a Funnel: and ſo much for the Front. Only I underſtand the height of the firſt Stair-Caſe to be twenty Foot; which is the height of the firſt Story.

The Court-Yard how to be built.

9. Beyond this Front let there be a ſpacious Court-Yard, with its three ſides much lower built than the Front. And in the four Corners of this Court, let there be raiſed Stair-Caſes, caſt into Turrets on the outſide, and projecting from the Row. But theſe Turrets are not to riſe ſo high as the Front; yet proportionably higher than the lower Edifices. And let not the whole Court be paved with broad ſquare Stone; becauſe this ſtrikes a great Heat in Summer, and Cold in Winter: but let ſome Walks be made of this Stone, running along the ſides of the Building, and making a Croſs in the middle, with Quarters for Graſs, which is to be kept ſhort cut.

The ornamental Parts of the Banquet and Houſhold Appartments.

10. Let the whole Banquet-ſide of the Court be filled with magnificent Galleries; in each whereof let there be three or five beautiful Cupola's, placed at equal Diſtances through the whole Lengths: and let the Windows be of Glaſs variouſly coloured and wrought. On the Houſhold-ſide, and that oppoſite to the Front, ſhould be Preſence-Chambers, and others for ordinary Uſe and Entertainments; as alſo Bed-Chambers; and let all three ſides be built in form of a double Houſe, without thorow Lights, or with Windows only one Way; ſo that there may be Rooms free from the Sun, both Forenoon and Afternoon: and contrive it ſo as to have Rooms ſhady for Summer, and warm for Winter. We ſometimes ſee elegant Houſes ſo full of Windows, that one can ſcarce find a Place to be out

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out of the Sun or Cold. I approve of Bow-Windows, as convenient things. In Cities indeed plain Windows are beſt, for the ſake of Uniformity, next the Street; otherwiſe they are convenient Retiring-Places for Conference; and at the ſame time keep off both the Wind and Sun: for what would otherwiſe ſtrike almoſt thro the Room, can thus ſcarce reach beyond the Window. But let theſe Bow-Windows be few, or not exceeding four; *viz.* two on each hand of the Area.

11. Beyond this let there be an inner Court; of the ſame Circuit and Height; ſurrounded on the outſide with a Garden; and with beautiful arched Terraſs-Walks within, as high as the firſt Story. Let the outward part of the lower Story, towards the Garden, have the two ſides turned to a Grotta, or place of Shade; and either open, or faſhed only towards the Garden. And let this Grotta not be ſunk, but lie level with the Ground; and have a proper Flooring to prevent Dampneſs. There ſhould alſo be a curious Fountain, or ſome magnificent Work of Statuary, in the midſt of this Court; with a Pavement like to that of the other. *Garden and Grotta.*

12. Let the Building on both ſides of this Court be deſtined for Privy-Chambers; and the end for Privy-Galleries: But Care muſt be had that ſome of the Rooms, Cloſets, and Galleries, be appointed for *Infirmaries*; in caſe the Prince and any of the Royal Family ſhould be ſick. And each Infirmary ſhould have its Anti-Chamber, Bed-Chamber, and With-drawing-Room. And let this be upon the ſecond Story. *Infirmaries.*

13. Let the end of the lower Story towards the Garden, be converted to a magnificent open Gallery, ſupported by Pillars. And again, upon the third Story, let there be on all the three ſides, the like kind of elegant open Galleries, raiſed on Pillars; for taking the Proſpect and Freſhneſs of the Garden [d]. At both Corners of the farther ſide, on the ſecond Story, let there be two Cloſets, or Cabinets, curiouſly inlaid, richly hung, faſhed with cryſtal Glaſs, and riſing in an elegant Cupola in the middle. Let theſe Cabinets be filled with all kinds of the nobleſt Curioſities. The upper Galleries alſo I would, if poſſible, have adorned with ſmall Fountains, playing from the Wall in different Places; and diſcharging the Water by ſecret Conveyances. *Open Galleries.* *Cabinets.* *Fountains.*

14. And thus much for the Model of the Palace; not here intending to ſpeak of Baths, Fiſh-Ponds, and the like. We ſhall only farther obſerve, that there ſhould be three Courts leading up to the Front of the Palace; *viz.* a plain green Court ſurrounded with a Wall, and Trees growing regularly along the ſides thereof; a ſecond Court of the ſame Dimenſion, but with little Turrets, or the like Embelliſhments upon the Wall; and a third, to make a Square with the Front; but not to be built round, nor encloſed with a naked Wall, but ſurrounded with Terraſſes, raiſed not upon Arches, but upon Pillars; and either leaded or flagged with broad Stone a-top; and adorned with little braſs-coloured Images. *Three Courts.* *Terraſſes.*

[d] For the Subject of *Royal Gardens*, ſee the following Eſſay.

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Offices. 15. As for Offices, let them ſtand at ſome diſtance from the Palace; and have low covered Galleries leading from them to it.

ESSAY XXIV. *Of* GARDENS.

Gardening affords a pure kind of Pleaſure. 1. GOD firſt planted a Garden: and indeed of all human Pleaſures, that of a Garden is the pureſt; and highly refreſhes and recreates the Spirits: inſomuch that without it, Buildings and Palaces are but groſs Handy-works; that have nothing of Nature in them. And we conſtantly find, that as Nations advance in Civility and Magnificence; they ſooner arrive at Elegance in Building, than in Gardening: as if the latter were the more perfect thing.

Royal Gardens to produce monthly. *For* December *and* January. 2. I lay it down as fundamental, that Gardens Royal ſhould have a Garden ſuited to every Month of the Year; ſo as to produce all thoſe things a-part, which flouriſh and come in Seaſon monthly. For *December*, *January*, and the latter part of *November*, chooſe ſuch things as are green all Winter; *viz.* Holly; Ivy; Bays; Juniper; Cypreſs; Yews; Box; Pines; Firs; Roſemary; Lavender; Periwinkle, both the white, the purple, and the blue; Germander; the ſeveral kinds of Iris; Orange-trees; Lemmon-trees; and Myrtles; if preſerved in the Green-houſe; as alſo Sweet Marjoram ſet to the warm Sun.

February. 3. For the latter end of *January* and *February*, there are the *Mezereon* Tree, which then bloſſoms; the *Crocus Vernus*, both the yellow and the grey; Primroſes; Anemonies; the early Tulip; the Oriental Hyacinth; the *Chamairis*; and the *Fritellaria*.

March. 4. For *March*, there are Violets of all kinds, eſpecially the ſingle blue, which are the earlieſt; the yellow Daffadil; the Daiſy; the Almond-tree; the Cornel-tree in Bloſſom; and the Sweet-briar.

April. 5. In *April* follow the double white Violet; the Wall-flower; the Stock-gilliflower; the Cowſlip; the Flower-de-luce; Lillies of all kinds; Roſemary-flowers; the Tulip; the double Piony; the pale Daffadil; the *French* Honey-ſuckle; the Cherry-tree, the Pear, and all the Plumb-trees in Bloſſom; the Bear's-breech in Leaf; and the Lelach-tree.

May *and* June. 6. In *May* and *June* come Pinks of all ſorts, eſpecially the Bluſh-Pink; Roſes of all kinds, except the Muſk-Roſe, which comes later; Honey-ſuckles; Strawberries; Bugloſs; Columbine; the *French* Marygold; *Flos Africanus*, ſingle and double; the Cherry-tree in Fruit; Currants; Figs in Fruit; Raſberries in Fruit; the Vine in Flower; Lavender in Flower; the Garden Satyrion, with the white Flower; *Herba Muſcaria*; the Lilly of the Valley; and the Apple-tree in Bloſſom.

July. 7. In *July* come Gilliflowers of all ſorts; Muſk-Roſes; the Lime-tree in Bloſſom; early Pears, Plumbs and Apples, in Fruit.

Auguſt. 8. In *Auguſt* come Plumbs of all ſorts in Fruit; Pears; Apricots; Barberries; Filberds; Muſkmelons; and Monks-hoods of all Colours.

9. In

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9. In *September* come Grapes; Apples; Poppies of all Colours; Peaches; *Melo-cotones*; Nectarines; Cornels; Wardens; Quinces. September.

10. In *October*, and the beginning of *November*, come Services; Medlars; Sloes; Roses cut or removed to come late; Holly-oaks, *&c.* The Plants here mentioned are for the Climate of *London*: but our meaning is to shew, how a kind of perpetual Spring may be procured in other Places also, according to their Nature. October *and* November.

11. And because the Odour of Flowers is much sweeter in the Air (where it undulates, like the warbling of Musick) than when in the Hand; nothing contributes more to procure the Pleasure of their free Scent, than to know what Plants best perfume the Air while growing. Roses, both the Damask and the Red, are, whilst on the Bush, retentive of their Odours; or perfume the Air so little, that you may walk by a whole Hedge-Row of them, without perceiving their Sweetness; even on a dewy Morning. Bays, Rosemary, and Sweet-Marjoram, likewise yield little Scent as they grow. *What Plants yield little odour as they grow.*

12. What most perfumes the Air whilst growing, is the Violet; especially the white double Violet, which flowers twice a Year; *viz.* about the middle of *April*, and towards the end of *August*. Next to this is the Musk-Rose; then come the Strawberry-leaves, which as they wither, yield an excellent cordial Odour: then the Vine Blossoms, which appear like the Dust upon the Stalk of a Bent. The next in order is Sweet-briar; then Wall-flowers, which are very delightful if set under a Parlour-window: then Pinks and Gilliflowers; then the Flowers of the Lime-tree; then the Honey-suckle at some small distance: and lastly, the Flowers of Lavender. We do not mention Bean-blossoms, because they are Field-flowers. *Those that perfume the Air most when growing.*

13. The Plants which agreeably perfume the Air, not when growing, but by being trampled upon and crushed, are three; *viz.* Burnet, Wild-thyme, and Water-mint. Therefore whole Walks should be planted with these; to have the Pleasure of their Odour in walking upon them. *Those that do it when trod on.*

14. Royal Gardens[a] should not contain less than thirty Acres of Ground; and may be properly divided into three parts: a Green at the Entrance; a Heath or Wilderness at going out; and the main Garden in the middle; besides Walks on both sides. And I should allot four Acres to the Green, six to the Heath, eight to the Side-walks, and twelve to the main Garden. *The Platform of a Garden Royal.*

15. The Green has two Advantages; the one, as nothing is more pleasant to the Eye than verdant Grass, kept short cut; the other, as it will afford a Walk in the middle up to a stately Hedge, which is to enclose the main Garden. But because this Walk will be long; and because the Shade ought not to be purchased by walking so far in the Summer's Sun; two Cover'd Walks, one on each side the Green, should be made, twelve Foot high, of Wood-Work; so as to afford a shady Passage into the Garden. *The Green, with its two Side-walks.*

16. Let the Figure of the Garden be square, and encompassed round with a beautiful arched Hedge; the Arches being ten Foot high, six Foot wide; *The Form of the Garden.*

[a] The Author here lays down the Platform of a Royal Garden, as in the foregoing Essay he gave the Model of a Royal Palace.

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wide; and ſupported by Pillars of Wood-Work; ſtanding at ſix Foot diſtance from each other. Over the Arches, let there be a continued Hedge, four Foot high, framed alſo of Wood: And over this, at the top of every Arch, let there be a little Turret; with a Cavity ſufficient to receive a Cage of Birds. And over every Space between the Arches, place ſome other gilt Figure, containing Plates of colour'd Glaſs for the Sun to play upon.

The great Hedge, how to be raiſed.

17. This Hedge I propoſe ſhould be raiſed upon a Bank, gently ſloped to the height of ſix Foot; and ſet all over with Flowers. I alſo mean, that this Square of the Garden ſhould not take up the whole breadth of the Ground, but leave room enough on both ſides for the making of various Walks; to which the two cover'd Alleys of the Green may lead. But there muſt be none of thoſe Walks with Hedges, either at the end or entrance of the Garden: Not at the Entrance, becauſe this would hinder the Proſpect of the beautiful Hedge from the Green; nor at the End, becauſe that would hinder the Proſpect thro the Arches, from the Hedge, upon the Heath.

The Diſpoſal of the Garden.

18. I leave the Diſpoſition of the Ground, contain'd within the great Hedge, to be varied at Pleaſure; adviſing only, that whatever form it is caſt into, it be not too full of Labour and Curioſity. Images cut in Juniper, or other Trees, I cannot approve of; as being only fit for Children. But low Hedges, cut round like Edging, with ſome little Pyramids interſperſed, are agreeable: and in ſome few Places, tall Pyramids and Columns of Wood, cover'd with Hedge-work, may be allowed.

The Walks and Mount.

19. I would alſo have the Walks ſpacious and large. Narrow Alleys indeed may be allowed upon the ſide Grounds; but none in the main Garden. I would alſo adviſe a large Mount in the middle of the Garden; with three Aſcents, and three Walks, broad enough to receive four Perſons abreaſt. Theſe Walks I would have circular, without any Bulwarks or Emboſſments. Let the whole height of the Mount be thirty Foot; and have an elegant Banqueting-houſe a-top, with neat Chimneys; and not too much Glaſs.

Fountains.

20. Fountains are very ornamental and refreſhing; but Ponds and Fiſh-Pools ſhould be rejected; as rendring the Garden unwholeſome, and filling it with Flies, Frogs, and the like. I would have the Fountains of two ſorts; the one to play as *Jet d' Eaux*; the other to receive Water in a beautiful Baſin, thirty or forty Foot ſquare; without Fiſh, Foulneſs, or Mud. The common Marble Statues, or gilt Images, are a proper Ornament for the former; but the principal thing in this caſe is, to procure a conſtant Courſe to the Water, that it may neither ſtagnate in the Shells nor Ciſtern; ſo as to grow green, red, or otherwiſe diſcoloured; or contract any Moſs or Putrefaction. Let it alſo be cleanſed every Day by the Hand, that it may remain limpid. It would be likewiſe an Ornament to have ſome Steps leading up to the Fountain; and a proper Pavement about it. The other kind of Fountain, which we may call a Bath, will admit of a great Variety of Ornaments; thus the bottom and ſides may be graced with Images, and ſet off with variouſly coloured Glaſs,

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Glaſs, or other things of Luſtre; and railed in, or ſurrounded with low Statues. But here again, the capital thing is, that the Water be in perpetual Motion; falling from a Head higher than the Bath; into which it ſhould be deliver'd by beautiful Spouts, and then immediately diſcharged under Ground by an equal Range of Pipes; ſo as to prevent Stagnation. As for artificial Rocks, and the curious Invention of arching Water without ſpilling, or throwing it into various Forms, as of Feathers, Drinking-glaſſes, Canopies, &c. theſe are agreeable Sights; but contribute nothing to Health or Neatneſs.

The Heath.

21. We now come to the Heath; which is the third part of our general Plan: And this I would have nearly reſemble a natural Deſart. Let there be no Trees planted in it; only in ſome Places certain Rows of them; to allow of ſhaded Walks, or laſhed Galleries on their tops, cover'd after the manner of Arbors. Let there be alſo ſome Thickets, up and down, of Sweet-briar, Honey-ſuckle, and Wild-vine. And let neither theſe Thickets, nor the Galleries on the Trees, be placed in any regular Order; but at Diſcretion. Let ſome part of the ground be thick-ſet with Violets, Straw-berries, and Primroſes: for theſe are ſweet, and proſper in the Shade. Let there alſo be little Hillocks raiſed like the natural Mole-hills in wild Heaths; and ſet, ſome with wild Thyme, ſome with Pinks, ſome with Germander, which has a beautiful Flower, ſome with Periwinkle, Violets, Straw-berries, Cowſlips, Daiſies, red Roſes, Lilly of the Valley, red Sweet-Williams, Bears-foot, and the like low Flowers, which are both ſweet and beautiful. Let ſome of theſe Hillocks have little Standards, or Buſhes ſet on their tops; ſuch as the Roſe, the Juniper, Holly, Barberry, red Currant, Gooſeberry, Roſemary, Bays, Sweet-briar, &c. all of them to be kept cutting, that they may not grow irregularly. And, except in theſe Particulars, let the main part of the Heath be open, without Trees or Shrubs.

Walks.

22. Let the Side-grounds be divided into a variety of private Walks; that ſome of them may be ſhaded at all times of the Day. Some alſo ſhould be defended from Wind; ſo that Perſons may walk in them as in a Gallery. And for this purpoſe, ſuch Walks muſt be cloſed at both ends. And let theſe cloſe Walks be not green, but gravell'd; to keep them conſtantly dry. In many of theſe Walks may be ſet Fruit-Trees of all ſorts; as well on the outſide, as the inſide Ranges. And let it be obſerved in general, to make the Borders, wherein the Fruit-trees are planted, wide, low, moderately inclining; and to ſet them ſparingly with Flowers, for fear of defrauding the Trees. At the ends of both the Side-grounds, I would have two Mounts raiſed ſome conſiderable height; ſo as to leave the Wall of the Encloſure breaſt-high, for affording a Proſpect into the Fields.

The Walks of the main Garden.

23. To return to the main Garden; there may here alſo be ſome ſpacious Walks, ſet on both ſides with Fruit-trees; as alſo certain elegant Groups of Fruit-trees, and beautiful Arbors, with Seats ranged in regular Order; but theſe ſhould, by no means, be ſet thick: for the main Garden ſhould

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ſhould be left open, and every way expoſed to the Air. There are ſide-Walks for Shade, in the Heat of the Day or Year: But the main Garden is deſigned for the more temperate Parts of the Year, as the Spring and Autumn; and alſo for the Summer Mornings and Evenings, or the more cloudy Days.

Aviaries. 24. I cannot approve of *Aviaries*, unleſs they are made ſo large, as to be turfed, and ſet with live Shrubs and Buſhes; both to give the Birds more freedom of flight, and perching; and to avoid the Appearance of Foulneſs on the Floor.

Concluſion. 25. As to the making of Walks upon Cliffs, and various agreeable Aſcents; theſe are the Gifts of Nature, and not always to be procured. But we have ſuited our Deſcription to every Place; and thus given a Platform of a *Garden Royal*; partly by Precept, and partly in the way of general Model; tho only the Outlines of it are touched. We have ſpared for no Coſt in the Deſign: But the Expence is nothing for Princes; who generally adviſe with Gardiners; and with no leſs Charge combine many things together with little Judgment; ſometimes adding Statues and the like, for State and Magnificence: tho theſe Matters no way conduce to the genuine Pleaſure and Delight of a Garden.

ESSAY XXV. *Of latent* PROPHECIES.

Secret Prophecies. 1. I Propoſe not here to ſpeak of divine Prophecies, nor of heathen Oracles, nor of natural Predictions; but only of Prophecies that have been of certain Memory, and from ſecret Cauſes.

That of the Pythoniſſa *to* Saul. 2. Saith the *Pythoniſſa* to *Saul*, *To morrow thou and thy ſon ſhall be with me.* *Virgil* has theſe Verſes from *Homer*:

At domus Æneæ cunctis dominabitur oris,
Et nati natorum, & qui naſcentur ab illis.

A Prophecy, as it ſeems, of the *Roman* Empire.

Seneca of America. 3. *Seneca* the Tragedian hath theſe Lines:

——————— Venient annis
Sæcula ſeris, quibus Oceanus
Vincula rerum laxet, & ingens
Pateat Tellus, Tiphyſque novos
Detegat Orbes; nec ſit Terris
Ultima Thule.

A Prophecy of the Diſcovery of *America*.

Polycrates's Daughter. 4. The Daughter of *Polycrates* dreamed, that *Jupiter* bathed her Father, and that *Apollo* anointed him; and it happen'd, that he was crucified in an open Place, where the Sun made his Body run with Sweat, and the Rain waſhed it.

5. *Philip*

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5. *Philip* of *Macedon* dreamed that he ſeal'd up his Wife's Belly; whence he ſuppoſed his Wife ſhould be barren: but *Ariſtander*, the Soothſayer, told him his Wife was with Child; becauſe Men do not ſeal up empty Veſſels. *Philip of* Macedon.

6. A Phantaſm that appear'd to *M. Brutus* in his Tent, ſaid to him, *Thou ſhalt ſee me again at* Philippi. *Tiberius* ſaid to *Galba*; *And thou* Galba *ſhalt alſo taſte of Empire.* *The Phantom to* Brutus.

7. In *Veſpaſian*'s time there went a Prophecy in the Eaſt, that ſome coming out of *Judæa*, ſhould reign over the World; which tho, perhaps, meant of our Saviour, yet *Tacitus* explain'd it of *Veſpaſian*. *That of a Ruler coming out of* Judæa.

8. *Domitian* dreamed, the Night before he was ſlain, that a golden Head was growing out of the Nape of his Neck: and indeed the Succeſſion for many Years had golden times. *That of* Domitian *a little before his Death.*

9. *Henry* the Sixth of *England*, ſaid of *Henry* the Seventh, when a Lad, and gave him Water; *This is the Lad that ſhall enjoy the Crown for which we ſtrive.* Henry *the Sixth.*

10. When I was in *France*, I heard from Dr. *Penas*, that the Queen-Mother, who was given to curious Arts, cauſed the King her Huſband's Nativity to be calculated under a falſe Name; and the Aſtrologer anſwer'd, that he ſhould be killed in a Duel: at which the Queen laughed, as thinking her Huſband to be above Challenges: but he was ſlain at Tilt; the Splinters of the Staff of *Montgomery* going in at his Beaver. *That of an Aſtrologer of a King of* France.

11. There was a trivial Prophecy when I was a Child, and Queen *Elizabeth* in the Flower of her Years; *When Hempe is ſponne*, England's *done*. Whereby was generally conceived, that after the Princes Reigns, who had the Letters of the Word *Hempe* for Initials (which were *Henry*, *Edward*, *Mary*, *Philip*, and *Elizabeth*) *England* ſhould come to Confuſion: which, thanks to God, is verified only in the Change of the Name; the King's Title now being no more of *England*, but of *Britain*. *A ſuppoſed Prediction of the Change of the King of* England's *Title.*

12. There was alſo another Prophecy before the Year *eighty-eight*, which I do not well underſtand. *Another of the* Spaniſh *Invaſion.*

There ſhall be ſeen upon a Day,
Between the Baugh *and the* May,
The black Fleet of Norway:
When that is come and gone,
England *build Houſes of Lime and Stone,*
For after Wars ſhall you have none.

It was generally conceived to be meant of the *Spaniſh* Fleet, that came in eighty-eight: for the King of *Spain*'s Sirname, they ſay, was *Norway*.

13. The Prediction of *Regiomontanus*, *That of* Regiomontanus.

Octogeſimus octavus mirabilis Annus;

was thought likewiſe to be accompliſh'd, in the ſending of that Fleet; being the greateſt in Strength, tho not in Number, that ever rode the Sea.

14. As

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Cleon's Dream.

14. As for *Cleon*'s Dream, of his being devour'd by a long Dragon, and expounded of a Sauſage-maker that troubled him; I take it to be a Jeſt. There are many of the like kind; eſpecially if we include Dreams, and the Predictions of Aſtrology: but I have ſet down only theſe few, of certain Credit, by way of Example.

The Judgment to be made of theſe Prophecies.

15. My Judgment is, that they ſhould all be deſpiſed; and ſerve but for Winter Talk by the Fire-ſide. Tho, when I ſay deſpiſed, I mean as to Belief: for the ſpreading, or publiſhing of them has done much miſchief. And I find many ſevere Laws made to ſuppreſs them.

Whence they have been encouraged.

16. What has given them countenance and ſome credit, conſiſts in three things; (1.) That Men mark when they ſucceed, and not when they fail. (2.) Probable Conjectures, or obſcure Traditions, often turn into Prophecies; while the Nature of Man, which is fond of Divination, thinks it no riſk to foretel, what in Reality is but collected: as in the Caſe of *Seneca*'s Verſes above-mentioned; for it was in his time matter of Demonſtration, that the Earth ſtretched far beyond the *Atlantick*; which might probably be conceived not all Sea: and adding thereto the Tradition in *Plato*'s *Timæus*, and his *Atlanticus*, this might encourage a Man to turn it into a Prediction. (3.) But the principal thing is, that almoſt all of them, being infinite in number, have been Impoſtures; and merely contrived and feigned by idle and crafty Brains, after the Event [f].

[f] See more upon this Subject in the *De Augment. Scientiar.* SECT. IV.

SECT.

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SECT. III.

ESSAYS UPON POLITICAL SUBJECTS.

ESSAY I. *Of* STATE COUNSEL.

1. THE greateſt Truſt between Man and Man, is that of giving Counſel. In other Truſts we venture only Parts of our Fortune; as Lands, Children, Reputation, *&c.* but to our Counſellors we commit the whole: who are therefore the more obliged to uſe the utmoſt Sincerity and Integrity. The wiſeſt Princes ſhould think it no diminution of their Authority, to adviſe with ſelect Council. God himſelf is not without his Counſel; having made it one of his Son's higheſt Titles to be call'd the *Counſellor*. And *Solomon* pronounces, that *in Counſel is Stability*. Human Affairs muſt and will have either a firſt or ſecond Agitation: and if they be not toſſed upon the Arguments of Counſel; they will be toſſed upon the Waves of Fortune; and be full of Inconſtancy, weaving and unweaving, like the reeling of a drunken Man. *Solomon* ſaw the Neceſſity and Uſe of Counſel; and his Son felt the force of it: for the beloved Kingdom of God was firſt rent and broken by ſuch ill Counſel, as holds out to us two evident Marks, whereby bad Counſel may always be known; *viz.* that it was young for the Perſons, and violent for the Matter. *The Advantage of Counſel to Princes.*

2. The Inconveniencies of calling and taking Counſel, are ſuppoſed to be three; (1.) *The divulging of Secrets*; (2.) *Leſſening the Authority of Princes*; and (3.) *The danger of ſiniſter Advice*. To prevent theſe Inconveniencies, the Doctrine of *Italy*, and the Practice of *France*, has, in the Reigns of certain Kings, introduced *Cabinet-Councils*; which is a Remedy worſe than the Diſeaſe. *Its Inconveniencies.*

3. (1.) As to *Secrecy*; Princes are not bound to communicate all things to all Counſellors; but may judiciouſly extract and ſelect both Perſons and Affairs. Nor is it neceſſary for a Prince who conſults what he ſhould do, to declare what he will do. But let Princes beware leſt themſelves reveal their own Secrets. *The divulging of Secrets.*

4. As for *Cabinet-Councils*; their Motto may be *Plenus Rimarum*. One futile Perſon, who glories in knowing and revealing Secrets, will prove more pernicious than many, who know it their Duty to conceal them. 'Tis true, ſome Affairs require the utmoſt Secrecy; and ſhould hardly go beyond the Knowledge of one or two; beſides the Prince himſelf. Nor are ſuch Counſels uſually found unproſperous; as being not only ſecret, but generally conducted ſteadily, in the ſame Spirit, without Diſturbance. But to render them ſucceſsful, the King muſt be prudent, and of great perſonal Abilities; and his Counſellors alſo, Men of Sagacity, and true *Cabinet-Councils.*

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to his Ends: as in the Case of King *Henry* the Seventh, who communicated his more important Secrets to but two Counsellors, *Morton* and *Fox*.

Lessening of Authority.

5. (2.) As for diminishing of Authority; the Majesty of Kings is rather exalted than diminished, when they sit in the Chair of Council: Nor is there any Instance of a Prince lessened in his Prerogative by his Council; unless where too great a Power was lodged in some one Counsellor; or too strict a Combination entered into by several: which are Inconveniencies easily discovered and remedied.

Sinister Counsel.

6. (3.) The last Inconvenience is, that Men will counsel with an Eye to themselves. But doubtless that Text, *He shall not find Faith upon the Earth*, is to be understood of the Times, and not of particular Persons. There are certainly Men faithful in their Nature; sincere, plain, and direct; without Craft or Disguise. Let Princes, above all things, procure such Men about them. Besides, Counsellors are seldom so united, as not to keep watch upon one another: so that if any one should give factious or selfish Counsel, it presently comes to the Prince's Ears. But the best Remedy is when Princes endeavour to know their Counsellors; and their Counsellors to know them [g]. On the other hand, Counsellors should not pry too much into the Person of their Sovereign. The true Composition of a Counsellor, is to understand his Master's Business better than his Temper; for such a Counsellor will probably advise him justly; and not comply with his Humour in hopes of pleasing. It may likewise prove of great Use for Princes to take the Opinions of their Council both separately and conjointly: for private Opinion is more free; and publick Opinion more solemn: as Men in private follow their own Affections; but in Company are more influenced by those of others. 'Tis therefore proper to take both; *viz.* from Men of the inferior Rank rather in private, that Freedom may be preserved; and from those of the superior, rather in publick, that they use not too great a Liberty.

Persons to be considered as well as Things.

7. 'Tis in vain for Princes to deliberate of Things, unless they also deliberate carefully of Persons: for Things are but as dead Images; whilst the Life of the Execution chiefly consists in the Choice of the Persons. Nor is it sufficient to consider of Persons, in the general, as in the abstract, or mathematically, what their Kind and Character should be; for the greatest Errors are committted, and the most Judgment shewn, in the Choice of Individuals. It should also be remember'd, that *the best Counsel comes from the Dead* [h]: for Books will speak the naked Truth; where living Counsellors perhaps would flatter. 'Tis therefore of use to be conversant in Books; especially such as were written by Persons in employ.

The Regulation of Councils.

8. The Councils of this Age are, in most Places, little more than familiar Meetings and Conversations, where Matters are lightly talked of, rather than seriously debated; and generally hurry too fast to the *Order* or *Act of Council*. It were better in Affairs of Weight, to have the Subject proposed one Day, and debated the next; that the Pillow may be consulted.

[g] *Principis est Virtus maxima nosse suos.*
[h] *Optimi Consiliarij mortui.*

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ſulted[i]. This was done in the *Treaty of Union*, between the Commiſſioners of *England* and *Scotland*; which was a regular and well conducted Aſſembly. But for private Petitions, I approve of certain fixed Days; as this gives the Suitors notice of the proper Times for applying; and eaſes the more ſolemn Meetings, or prevents their being interrupted in their more immediate Buſineſs.

Committees.

9. In appointing *Committees* to prepare Matters for informing the Council; 'tis better to chooſe indifferent Perſons, than to make a kind of Neutrality, by adding ſome ſtrong Partizans on both ſides.

Standing Commiſſions.

10. I alſo approve of ſeparate *Standing Commiſſions*; for Trade, the Treaſury, War, Suits, Grievances, particular Provinces, *&c.* And where there are ſeveral ſubordinate Councils, and but one Council of State, as in *Spain*, they are nearly ſuch Standing Commiſſions as we ſpeak of; only with greater Authority. Let the Perſons who are to inform Councils, from their particular Profeſſions, as Lawyers, Seamen, Artificers, *&c.* be firſt heard before Committees; and then, as occaſion ſerves, before the Council. And let them not come in a tumultuous or rude manner, for that were to clamour at Councils, not inform them.

The Difference betwixt long and ſquare Council-Tables.

11. A long and ſquare Table, or Seats to the Walls of the Council-Chambers, may ſeem things of Form, but are things of Subſtance; for only a few at the upper end of a long Table, in effect carry the whole Buſineſs; but in the other Caſes, the Counſellors, who ſit lower, may alſo aſſiſt.

The Conduct to be obſerved by a King in Council.

12. Let a King when he preſides in Council, beware of declaring his own Opinion too ſoon; otherwiſe his Counſellors will fall in with him; and inſtead of free Advice, ſing him a Song of *Placebo*[k].

ESSAY II. *Of the* REGULATION *of* EMPIRE.

The State of Kings.

1. 'TIS doubtleſs a miſerable State of Mind, to have few things to deſire, and many to fear: yet this is almoſt peculiar to Kings; who ſtanding on the top Round of Glory, can aſpire no higher; and therefore grow languid. Whilſt on the other hand, they have many Apprehenſions of Dangers, and flying Shadows to cloud their Minds. And this one Reaſon *why the Hearts of Kings are inſcrutable*. For Multiplicity of Jealouſies, and the want of ſome predominant Paſſion to command the reſt, renders Mens Hearts hard to be known. And hence again, Princes often create Deſires to themſelves, and apply to leſſer Matters; as the erecting of a Building; the creating of an Order; inſtituting a College; the advancing a Favourite; or the acquiring a Perfection in ſome Art, as *Nero* in playing upon the Harp; *Domitian* in drawing the Bow; *Commodus* in fencing; *Caracalla* in driving the Chariot, *&c.* all which ap-

[i] *In nocte Conſilium.*

[k] For more upon this Subject, ſee the *Sapientia Veterum*, *Sect.* III. particularly the Fable of *Jupiter* and *Metis* explained of Princes and their Council.

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pears incredible to thoſe unacquainted with this Axiom; that *the Mind is more exhilerated and gratified by advancing in ſmall Things, than by reſting in great ones.* We ſee alſo that Kings who have been fortunate in the beginning of their Reigns, finding it impoſſible to advance and prove ſucceſsful for ever; uſually turn ſuperſtitious and melancholly at laſt: as *Alexander* the *Great*; *Diocleſian*; and in our own time, *Charles* the Fifth, *&c.* for he who has been always accuſtomed to advance, but at length meets with a Stop; here ſinks in his own Opinion, and no longer remains the thing he was [1].

The true Temper of Empire.

2. We now proceed to conſider the true Temper of *Empire:* which is rarely found, and hard to preſerve; for both Temper and Diſtemper conſiſts of Contraries. But it is one thing to mix Contraries, and another to interchange them. *Apollonius* being aſked by *Veſpaſian*, what was *Nero*'s Ruin; anſwered, with great Sagacity, *that* Nero *could tune and touch the Harp with Skill; but in Government ſometimes ſtrained the Strings too high, and ſometimes let them down too low.* And certainly nothing deſtroys Authority ſo much, as the unequal and unſeaſonable Interchange of Power, over-ſtretched and relaxed, by Starts.

The modern Politicks imperfect.

3. The modern Politicks, however, conſiſt chiefly in diſcovering preſent Subterfuges or Evaſions, and oppoſing Remedies to impending Dangers; rather than in any ſolid, prudent, or ſettled Scheme to prevent their Approach. This is coming to cloſe Combat with Fortune: but beware of ſlighting the firſt Occaſions or Beginnings of Troubles; for no Man can prevent the Spark; or tell from what Quarter it may come. The Difficulties and Obſtacles in the Affairs of Princes, are doubtleſs great and many; but the greateſt often lie in their own Paſſions and Tempers. For as *Tacitus* well obſerves, 'tis common with Princes to deſire Contradictions [m]: it being the Soliciſm of exorbitant Power, to expect the End without procuring the Means.

The Affairs of Princes regard

4. The Affairs of Princes regard, (1.) their Neighbouring Nations; (2.) their Wives; (3.) their Children; (4.) Prelates and Clergy; (5.) Nobles; (6.) Gentry; (7.) Merchants; (8.) Common People; and, (9.) their Soldiery; from each whereof Dangers ariſe, unleſs carefully prevented.

their Neighbours,

5. (1.) As for their *neighbouring Nations*; no general Rule of Caution can be given; becauſe of the difference of Occaſions; except this, which always holds, that the Prince keep conſtant Watch, whether any of his Neighbours over-grow, by Increaſe of Territory, Trade, or the like; ſo as to become more formidable than before. And this is generally the Office of *Standing Councils* [n] to foreſee, and prevent. The Opinion of certain Schoolmen is not to be admitted; as if a War were unjuſt, except upon preceding Injury or Provocation: for a juſt Fear of impending Danger,

[1] See the following Eſſay.

[m] *Sunt plerumque Regum voluntates vehementes; & inter ſe contrariæ.*

[n] See above, *Eſſay* I. §. 10.

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Danger, is doubtleſs a lawful Cauſe of a War; tho no hoſtile Violence had been offer'd °.

6. (2.) For their *Wives*; there are cruel Examples of the kind. *Livia* is infamous for poiſoning *Auguſtus Cæſar*; *Roxolana* was the Deſtruction of *Sultan Muſtapha*; the Queen of *Edward* the Second of *England*, had the principal Hand in depoſing and murthering him. And this kind of Danger is to be chiefly fear'd, when the Wives have Children by a former Huſband, or live in Adultery. *Wives.*

7. (3.) For their *Children*; the Tragedies acted by them are many: and in general, the Suſpicions harboured by Fathers againſt their Children, have proved unfortunate. The Murder of *Muſtapha* was ſo fatal to *Soly-man*'s Line, that the Succeſſion of the *Sultans* from *Solyman* to this Day, is ſuſpected to be ſpurious; becauſe *Selymus* the Second was thought to be ſuppoſititious. And many the like Examples there are; but few or none where the Fathers have received any Advantage from their Diſtruſt; except where the Sons were in open Rebellion againſt them; as *Selymus* the Firſt againſt his Father *Bajazet*: and the three Sons of *Henry* the Second of *England*. *Children,*

8. (4.) There is alſo Danger from their *Prelates*, when powerful or aſpiring; as in the times of *Anſelm* and *Thomas à Becket*, Archbiſhops of *Canterbury*, who with their Croſiers almoſt diſputed it with the King's Sword; yet they had to deal with lofty and couragious Kings, *William Rufus*, *Henry* the Firſt, and *Henry* the Second. But this Danger from Prelates is not much to be feared, except where the Clergy depend upon the Authority and Juriſdiction of a foreign Prince; or where the Eccleſiaſticks are choſe by the People, and not preſented by the King, or any particular Patron. *Prelates and Clergy.*

9. (5.) As for their *Nobles*; theſe are to be reſtrained, and kept as it were at a due diſtance from the Throne. To depreſs them may indeed make a King more abſolute; but at the ſame time more unſafe, and leſs able to act his Pleaſure; as I have obſerved in my Hiſtory of *Henry* the Seventh, who continually depreſſed his Nobility; whence his Times were full of Difficulties and Troubles: for the Nobility, tho they continued loyal, yet did not co-operate with him in his Affairs; ſo that in effect he acted by himſelf. *Nobles,*

10. (6.) As for the *Gentry*; there is not much Danger from them; becauſe they are a Body diſperſed. They may ſometimes indeed diſcourſe high, but have little effect: beſides, they ſhould be encouraged as an excellent Counterpoiſe to the Nobility; ſo as to prevent their growing too potent. And again, their Authority being immediately exerciſed over the common People; they can beſt allay popular Commotions. *Gentry,*

11. (7.) The *Merchants* are like the *Vena Porta*; and unleſs they flouriſh, a Kingdom may have ſome good Limbs indeed, but will have empty Veins; and a waſted Body. Immoderate Taxes and Impoſts upon them, ſeldom encreaſe the King's Revenue; for what he thus gains in the Parts, he *Merchants,*

° See the Author's Diſcourſe of a War with *Spain*, *Vol.* II. *Supplem.* 12.

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he loſes in the Whole; the particular Rates being enlarged, whilſt the national Trade is diminiſhing.

Common People. 12. (8.) There ſeldom ariſes any Danger from the common People; unleſs they are headed by powerful and popular Leaders; or unleſs a Change is introduced in Religion, and their ancient Cuſtoms; or unleſs heavy Taxes are impoſed; or their way of living otherwiſe abridged.

And the Soldiery. 13. (9.) Laſtly for the *Soldiery*; 'tis extremely dangerous where they remain in a Body, whether by way of Army or Garriſon, and are uſed to Donatives: this we ſee remarkably in the *Janizaries*, and the *Pretorian* Bands of *Rome*. But the raiſing and exerciſing of Soldiers, provided it be in different Places, under ſeveral Officers, and without Donatives, are things of Uſe, Defence, and no Danger.

Two Admonitions to Kings. 14. Princes are like the celeſtial Bodies, that cauſe happy or unhappy Times by their Influence; and receive much Veneration, but no Reſt. All the Precepts with regard to the Admonitions to Kings, are comprehended under theſe two; *Remember thou art mortal: and remember thou art God's Vicegerent.* The one tends to bridle their Power, and the other to regulate their Will P.

ESSAY III. *Of* AMBITION.

The Nature of Ambition. 1. AMbition is like the Bile, which if unobſtructed, renders Men active, briſk, and eager; but if ſtopped, becomes aduſt, malignant and venomous: for thus ambitious Perſons, if the Way prove open for their riſing, ſo that they continually advance, are rather buſy than dangerous; but if checked, and ſometimes fruſtrated in their Deſires, they become ſecretly diſcontent; look upon Men and Things with an evil Eye; and are inwardly beſt pleaſed at Misfortunes: which is a bad Temper in any Servant of a King or State. Princes therefore, if they employ ambitious Officers, ſhould make them always progreſſive, and never retrograde. But as this cannot be done without Inconvenience, it were better not to employ ſuch Perſons at all: for if they riſe not with their Service, they will endeavour to ſink their Service with them.

The Uſes of ambitious Men. 2. Good Generals and Leaders muſt however be choſe, tho they are ambitious; becauſe the Uſefulneſs of their Service over-balances the Inconvenience: and to chooſe a Soldier without Ambition, is to pull off his Spurs. Ambitious Men are alſo highly uſeful, as Screens to Princes in Matters of Danger and Envy: for no Man will take this Poſt unleſs he be like a blinded Pigeon, that mounts becauſe he cannot ſee about him. There is another conſiderable Uſe of ambitious Men, in pulling down the Greatneſs of any Subject that over-tops; as *Tiberius* uſed *Macro* in pulling down *Sejanus*. Since therefore ambitious Men are neceſſary in the Caſes above-

P See more upon this Subject in the *De Augment. Scientiar.* Vol. I. *Sect.* XXV. under the *Doctrine of Government*. Again in the *Sapientia Veterum, Sect.* III. Vol. II. Supplem. 12, 13. See alſo the following *Eſſays*.

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above-mentioned; let us ſee by what means they may be curbed and reſtrained, ſo as to prove leſs dangerous.

How ambitious Men are to be curbed.

3. And firſt, they are leſs dangerous when of mean Birth, than when noble; when rather harſh in their Nature, than gracious and popular; and if rather new raiſed, than when grown ſubtile, and fortified in their Greatneſs. 'Tis generally accounted a Weakneſs in Princes to have Favourites; but in reality, this of all others is the beſt Remedy againſt any exorbitant Power of the Nobles, or great Officers: for when the Power of forwarding and retarding lies in the Favourite, 'tis almoſt impoſſible for another to be over-great.

A ſecond Means.

4. A ſecond uſeful Means of curbing them, is to balance them by others as ambitious as themſelves. But then there ſhould be ſome moderate Counſellors to interpoſe and keep Matters ſteddy; for without this Ballaſt, the Ship will roll too much. At leaſt, a Prince may encourage and animate ſome meaner Perſons to be Scourges to ambitious Men. To keep them under apprehenſion of Ruin, may have a good Effect in timorous Natures: but this would precipitate the Stratagems and Endeavours of ſuch as are bold and daring; and thus prove dangerous. If Neceſſity requires they ſhould be pulled down, and yet it is not ſafe to do it of a ſudden; the beſt Way is continually to interchange Favours and Diſgraces, in order to ſurprize and confound them; that they may not know what to expect, but walk as it were in a Wood.

Different kinds of Ambition.

5. The Ambition of prevailing in great Things, is leſs hurtful than that of intermeddling in all; which cauſes Confuſion of Councils, and deſtroys Buſineſs: yet there is leſs Danger from an ambitious Man, active in Buſineſs, than from one that is powerful in Intereſt and Dependants. He who endeavours to excel amongſt able Men, has a great Taſk; but this is always of publick Advantage: whereas, he who contrives to keep wiſe Men out of the way, that himſelf may be the only Figure amongſt Cyphers, is the Peſt of an Age.

The Advantages of Honour.

6. Honour is recommended by three Advantages; *viz.* (1.) the Power of doing good; (2.) Acceſs to Potentates; and, (3.) an Opportunity of raiſing ones private Fortune. He who in aſpiring has the beſt of theſe three Intentions, is honeſt; and the Prince who can diſcern and diſtinguiſh them in his Servants, is wiſe. But, in general, Princes ſhould endeavour after ſuch Miniſters as are led more by Duty, than by Ambition; and ſuch as love Buſineſs rather out of Conſcience, than Oſtentation. And laſtly, let Princes judiciouſly diſtinguiſh betwixt a buſy Temper and a willing Mind.

ESSAY.

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ESSAY IV. *Of* GREAT PLACE.

The Inconveniencies of Great Place.

1. MEN in great Place are thrice Servants; Servants of the Sovereign; Servants of Fame; and Servants of Buſineſs: ſo that they enjoy no Liberty, either in their Perſons, Actions, or Time. 'Tis a ſtrange Paſſion to covet Power, and loſe Liberty; or to affect Power over others, and loſe it over ones ſelf. The riſing in Office is laborious; and one painful Step leads to another more painful: ſometimes alſo it is ignoble; and Dignity acquired with Diſgrace. The Standing is ſlippery, and the Return either a Fall, or at leaſt an Eclipſe; which itſelf is a melancholy thing[q]. Nay, Men cannot retire when they would; nor will they when they ſhould: but grow impatient of Privacy, even under Age and Sickneſs, which require the Shade: thus acting like old Townſmen, who will be ſtill ſitting at their Street-door, tho they thereby expoſe themſelves to Scorn.

Men in high Poſts only happy by report.

2. Men in great Place had need borrow other Mens Opinions to think themſelves happy; for if they judge by their own feeling, they cannot find it: but if they revolve with themſelves, what other Men think of them; and how willingly others would change Conditions with them; it is then they are happy, as it were by Report: when perhaps they find the contrary within. For they are the firſt that find their own Misfortunes; but the laſt that find their own Faults. Men in high Station are certainly Strangers to themſelves; and in their Hurry of Buſineſs, want time to attend their own Health, both of Body and Mind[r].

The Advantages of Great Place.

3. Great Place affords great Opportunities both of doing Good and Evil: the latter whereof is to be accounted a Curſe; for in Evil the beſt Condition is not to will; the ſecond, not to be able. But to acquire the Power of doing Good, is doubtleſs the true and lawful End of Aſpiring. For good Thoughts, tho God accept them, are with regard to Man, little better than good Dreams; unleſs reduced to Action: and that cannot be done without ſome publick Poſt, and Power; in the way of the commanding Ground. Merit and good Works are the true Ends of Man's Labour; and Conſciouſneſs of the ſame, is the Perfection of his Reſt. *And the Lord looked, and beheld the works of his hands, and ſaw that all was extremely good:* And then followed the Sabbath. Thus if a Man can be a Partaker of God's Work, he ſhall likewiſe be Partaker of his Reſt.

Precepts for Men in Office.

4. In the Diſcharge of thy Office, ſet before thee the beſt Examples; and after ſome time, thy own Example; examining thyſelf ſtrictly, whether thou didſt not begin better, than thou holdeſt on. Nor neglect the Examples of ſuch as have behaved ill in the ſame Poſt; tho this not to ſet off thyſelf

[q] *Cum non ſis qui fueris, non eſſe cur velis vivere?*
[r] *Illi mors gravis incubat,*
Qui notus nimis omnibus,
Ignotus moritur ſibi.

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thyſelf by taxing their Memory; but to learn what to avoid. Reform, therefore, without Oſtentation, or Scandal to former Times and Perſons; yet ever obſerve to ſet good Preſidents, as well as to follow them. Reduce things to their firſt Inſtitution; and examine wherein, and by what means they have degenerated: yet conſult with both Times; with the ancient to learn what is beſt; and with the later to know what is fitteſt. Endeavour to confine all Acts of Power to Rule; that Men may know before-hand what to expect: yet be not too poſitive and peremptory; and carefully to explain the Reaſon, when thou digreſſeſt from thy Rule. Preſerve the Right of thy Place; but without moving Queſtions of Juriſdiction: and rather aſſume and exerciſe thy Right with Silence and in Fact, than claim and challenge it with Vociferation. Preſerve likewiſe the Rights of inferior and ſubordinate Places; and think it more Honour to direct in chief, than to be buſy in all. Embrace and procure Aſſiſtance and Information, as to the Execution of thy Office: and drive not away, as Medlers, thoſe that offer their Service therein; but rather invite and receive them with Favour.

5. The Vices apt to attend the Exerciſe of Authority, are chiefly four; *viz.* *Delays*, *Corruption*, *Roughneſs*, and *Facility*. With regard to *Delays*; give eaſy Acceſs; keep appointed Times; go thro with what is in hand; and admit no new Buſineſs but of Neceſſity. *The Vices attending the Exerciſe of Power*; viz. *Delays*.

6. For *Corruption*; not only bind thy own Hands, and the Hands of thy Servants, from taking; but the Hands alſo of Suitors from offering Bribes. The firſt End is ſecured by the Uſe of Integrity; and the ſecond, by Integrity profeſs'd, with a manifeſt Deteſtation of Bribery: and avoid not only the Crime, but the Suſpicion. Whoever is found variable, and changes manifeſtly without manifeſt Cauſe, gives Suſpicion of Corruption. Therefore, whenever a Man in Office changes the Opinion he had once declared, or the Courſe once entered upon; let him always profeſs it ingenuouſly; and at the ſame time fully explain and inculcate the Reaſons that moved him thereto; without hoping to eſcape unobſerved. A favourite Servant that has Intereſt with his Maſter, without any manifeſt Cauſe of Eſteem, is commonly thought no other than an oblique Way to Corruption. *Bribery*.

7. As for *Roughneſs*; it occaſions Envy and Ill-will, without receiving any Advantage; for Severity occaſions Fear; but Roughneſs, Hate: whereas even Reproofs from Authority ſhould be grave, and not reproachful. *Roughneſs*.

8. *Facility* is worſe than Bribery: for Bribes are ſeldom offer'd; but if a Man be ſway'd by Importunity, or idle Reſpects, theſe are always at hand. Thus *Solomon* ſays; *to reſpect perſons is not good: for ſuch a man will tranſgreſs for a piece of bread.* *Facility*.

9. 'Tis a true ſaying, *Place ſhews the Man*; and it ſhews ſome to Advantage, others not. *Tacitus* ſays, *that* Galba *was univerſally allowed fit to govern, till he became Emperor:* And that *Veſpaſian alone, of all the Emperors, was alter'd for the better.* It is an evident Sign of a generous Diſpoſition, when Honour improves the Man; for Honour is, or ſhould be, the Place of Virtue: and *Place ſhews Men.*

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as in Nature, Things move violently to their Place, and calmly when they are in it: ſo Virtue is violent in Ambition; but in Honour more calm.

The Way of riſing. 10. There is no riſing to great Place, but by winding Stairs; and if Faction reigns, it is beſt for a Man to take his Side in riſing; and to balance himſelf when raiſed.

Rules for Behaviour in Office. 11. Hurt not the Memory of thy Predeceſſor; otherwiſe it is a Debt will be repaid thee by thy Succeſſor. If thou haſt Colleagues in Office, treat them as Friends; and rather call them when they do not expect it, than exclude them when it is proper they ſhould be called. Mention not thy Office too much in Converſation; but let it be rather ſaid, *when he ſits in his Place, he is another Man.*

ESSAY V. *Of* FOLLOWERS *and* FRIENDS.

Followers of what ſort to be choſe, and to what entitled. 1. EXpenſive Followers are not to be admitted; leſt whilſt a Man makes his Train longer, his Wings grow ſhorter. Under expenſive Followers, I reckon not only thoſe who charge the Purſe; but ſuch alſo as are importunate and troubleſome in their Petitions. Ordinary Followers ought to expect no higher Conditions than Countenance, occaſional Recommendation, and Protection from Injuries.

Factious Followers. 2. Factious Followers are ſtill more to be avoided, who apply not out of Affection to their Patron; but Hatred to another Perſon: whence often proceeds that Miſunderſtanding we ſee between Men of Power.

Boaſting Followers. 3. Again, thoſe boaſting Followers are pernicious, who like Trumpets reſound the Praiſe of their Patrons: for ſuch Followers taint Buſineſs by divulging it; and, if well conſidered, export the Honour of their Patron, and bring him Envy in return.

Spying Followers. 4. There is another kind of Followers who are extremely dangerous; being indeed no other than Spies, that ſearch out the Secrets of the Family, and whiſper them to others. Yet ſuch Followers often ſtand high in the Favour of their Patrons; becauſe they are officious, and generally exchange Whiſpers.

Followers of the ſame Order with the Patron. 5. The Patronage of certain Orders of Men, of the ſame Profeſſion with the Patron; as for a General to patronize Soldiers, *&c.* has been always eſteem'd a graceful Thing, and well received even in Monarchies; provided it be done without much Pomp or Popularity.

The moſt honourable and uſeful Followers. 6. But the moſt honourable kind of Patronage, is for a Perſon to profeſs himſelf the Patron of thoſe who are eminent in Virtue and Merit; of whatever Order or Condition they are. But where there is no remarkable Difference in Merit, 'tis better to patronize the ſomewhat leſs, than the more virtuous. For, to ſpeak the naked Truth, active and induſtrious Men are more ſerviceable in corrupt Times, than the truly virtuous.

Followers, how to be uſed. 7. In Government indeed 'tis beſt to treat Subjects of the ſame Rank equally: for highly to countenance a few, is to make them inſolent; and the reſt diſcontented: ſince Parity of Rank requires Parity of Favour, as its Due. On the

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the other hand, in matters of mere Favour, it is proper to uſe Men with Diſtinction and Choice; for this will make the Perſons preferred more thankful, and the reſt more officious: nor can any one here juſtly complain, becauſe the whole is matter of Favour, not of Duty.

Cautions required with regard to Followers and Friends.

8. 'Tis a Point of Diſcretion, not to favour any Man too highly at the firſt; becauſe ſucceeding Favours can ſcarce hold in the ſame Proportion. To be moulded and governed by any one Friend, is not ſafe; becauſe it ſhews Softneſs, and gives occaſion to Scandal and Diſrepute: for many that would not immediately cenſure ourſelves, will take greater Liberties with our Intimates, and thus wound our Honour. Yet to be ſubject to the Power of many, and differently diſtracted thereby, is ſtill worſe; for this makes a Man to be of the *laſt Impreſſion*, and full of Inconſtancy.

To take Advice of a few.

9. To conſult with ſome few Friends is honourable and uſeful: for Byſtanders often ſee more than the Players; and the Vale beſt diſcovers the Hill.

Little Friendſhip in the World.

10. There is little true Friendſhip in the World, and the leaſt of all between Equals; which is the kind ſo much magnified by the Ancients. All there is lies betwixt Superior and Inferior; whoſe Fortunes may each comprehend the other[f].

ESSAY VI. *Of* NOBILITY.

Nobility neceſſary in Monarchies, not in Republicks.

1. A Monarchy without Nobles, is an abſolute Tyranny; as in the *Turkiſh* Empire: for Nobility tempers Sovereignty; and ſomewhat draws the Eyes of the People from the regal Line. But Nobles are not required in Democracies; which commonly prove leſs ſubject to Faction and Diſturbance, where there are no Stirps of them: for then Mens Eyes are fixed upon Buſineſs, not upon Perſons: or if upon Perſons, 'tis for the ſake of the Buſineſs; as ſuch Perſons are fitteſt to manage; and not for their Arms and Enſigns.

The Advantage of Republicks.

2. The Republick of *Switzerland*, we ſee, continues to flouriſh; notwithſtanding their Diverſity of Religion, and of Cantons: for not Dignity, but Utility is their Bond. The Form of Government in the United Provinces of *Holland* is excellent: for where an Equality reigns, the Debates are more impartial; and the Taxes more chearfully paid.

The Advantages and Inconveniencies of Nobility to a Kingdom.

3. For the Nobles to have great Authority in a Monarchy, adds Majeſty to the Monarch; but diminiſhes his Power: it alſo puts Life and Spirit into the People, tho it depreſſes their Fortunes. 'Tis well when the Nobles are not greater than Sovereignty and Juſtice require; yet ſupported with ſuch a Dignity, as may break the Inſolence of the People, before it pours too faſt upon the Majeſty of Kings. On the other hand, a numerous Nobility, which is generally leſs powerful, cauſes Poverty in a State; as occaſioning a Profuſion of Expence: and as many of the Nobles muſt in time neceſſarily

[f] See the Eſſay on *Friendſhip*, *Sect.* I. *Eſſay* 5.

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become indigent; this makes a kind of Divorce or Inequality between Riches and Honour.

The Advantage of Nobility in particular Perſons.

4. As for *Nobility* in particular Perſons; it is a venerable thing to ſee an ancient Caſtle, or Seat undecay'd; or an old Timber-tree ſound and perfect: but much more venerable to behold an ancient noble Family unhurt by the Waves and Storms of Time. For new Nobility is the Act of regal Power; but ancient Nobility the Work of Time.

The Founders of noble Families often more virtuous than their Deſcendants.

5. The firſt raiſed to Nobility, commonly excel their Deſcendants in Brightneſs of Virtue, but not in Innocence: for Men ſeldom riſe to Honours without a Mixture of good and evil Acts. But it is juſt that the Memory of their Virtues ſhould continue down to Poſterity; and their Vices die with themſelves.

Nobility ſlackens Induſtry, and extinguiſhes Envy.

6. Nobility of Birth uſually ſlackens Induſtry; and he who is not induſtrious, envies another's Diligence. Beſides, Nobles cannot riſe much higher; and he that ſtands at a Stay whilſt others advance, will hardly avoid being envious. On the other hand, Nobility prevents the Envy of others; becauſe Nobles ſeem born in the Poſſeſſion of Honours.

The Advantage of uſing Nobles to a King.

7. Certainly ſuch a King as has prudent and able Nobles about him, will find his Buſineſs go ſmoother by uſing them chiefly: for the People naturally bend to them, as born, in ſome ſort, to command.

ESSAY VII. *Of* MASQUES *and Publick Entertainments.*

The Muſick Part, how to be conducted.

1. THESE things are but Toys; yet ſince Princes will have them, 'tis better they ſhould be graced with Elegance, than ſullied with Coſt. Dancing to Song is a thing of great State and Pleaſure, if the Song be in Choir, aloft, accompanied with broken Muſick; and the Tune be fitted to the Deſign. Acting in Song, eſpecially in Dialogue, has an extreme good Grace. I ſpeak this of Acting, not Dancing, (which is a mean and vulgar thing) the Voices of the Dialogue being ſtrong and manly (a Baſe and a Tenor, without the Treble) and the Air high and tragical[t]. Several Choirs placed one againſt another, and taking the Voice by Catches, Anthem-wiſe, give great Pleaſure. Let Songs be loud and chearful; not chirping or puling. Let the Muſick likewiſe be ſharp, well placed, recreative, and mixed with ſome ſtrange Changes.

The Scenes.

2. The turning of Dances into Figure, is a childiſh Curioſity. Change of Scenes without Noiſe, is a thing of great Beauty and Pleaſure; for this feeds and relieves the Eye before it is cloy'd with the ſame Object. Let the Scenes abound with Light, eſpecially coloured and varied: and let the Parts that are to come down from the Scenes have ſome Motions upon the Scene itſelf, before they deſcend. For this attracts the Eye ſtrangely, and makes it, with great Pleaſure, deſire to ſee what it cannot perfectly diſcern.

The Dreſſes.

3. The Colours that ſhew beſt by Candle-light, are white, carnation, and a kind of Sea-green. Spangles alſo, tho not coſtly, are of great Luſtre:

[t] The Author ſeems to mean what we find in ſome of our beſt *Italian* Opera's.

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ſtre: but rich Embroidery is loſt, and not diſcerned. Let the Dreſſes be graceful, and becoming the Perſon, when the Vizard is off; but not common, as thoſe of *Turks*, Soldiers, Sailors, *&c.*

The Anti-maſque.

4. Let the Anti-maſques be ſhort; they have commonly conſiſted of Fools, Satyrs, Baboons, Wild-men, Antiques, Beaſts, Spirits, Witches, Pygmies, Cupids, moving Statues, and the like. As for Angels, 'tis too ſerious to put them in Anti-maſques; and any thing hideous, as Devils, Giants, *&c.* is as unfit.

Perfumes.

5. Sweet Odours ariſing ſuddenly, without any Drops falling, are highly agreeable and refreſhing in large Companies. Double Maſques, one of Men, another of Ladies, add State and Variety. But all is nothing, except the Room be kept clear and neat.

ESSAY VIII. *Of* PETITIONERS, *or* SUITORS.

The Double-dealing practiſed in Petitions.

1. MANY ill Deſigns and Projects are enter'd upon; and private Suits corrupt the publick Advantage. Many things alſo, good in themſelves, are undertaken with a bad Intention; or with a ſiniſter and crafty Purpoſe, not directed to the Execution. Some readily lay hold of Suits, and eagerly promiſe to forward them, without ever intending to do it: but if they find the Buſineſs ſucceed by the means of others; they will fiſh for Thanks, take a ſecondary Reward, or at leaſt, whilſt the Affair is in hand, make their own Uſe of the Suitor's Hopes. Some embrace Suits merely with a View to croſs the Purpoſe of another; or elſe ſubtily to exhibit an Information, for which they could not otherwiſe have a proper Pretext; and this without regarding what becomes of their Suit, when that Turn is ſerved: or, in general, to make other Mens Buſineſs a Bridge to their own. Nay, ſome act ſo craftily as to undertake Suits, with a full Intent to drop them; and thus oblige their Competitor.

Every Suit attended with a Right.

2. Certainly, if conſider'd, every Suit is attended with a certain Right; *viz.* a Right of Equity, if it be a Suit of Controverſy; or a Right of Merit, if it be a Suit of Favour. When Affection leads a Man to favour the wrong Side in a Suit of Equity; let him rather uſe his Authority to compound the Matter, than to carry it. If Affection incline a Man to the leſs worthy in a Suit of Favour; let him not however calumniate the more deſerving Perſon.

Opinion to be taken in doubtful Suits.

3. Suits which a Man does not well underſtand ſhould be committed to ſome Friend, of Fidelity and Judgment, for his Opinion, whether they may be honourably engaged in; but this Friend muſt be prudently choſe, to prevent being impoſed upon.

Plain-dealing in Suits eſteem'd a Favour.

4. The Suitors of theſe times are ſo harraſſed with Delays and Abuſes, that Plain-dealing in rejecting their Suits at firſt, and nakedly reporting the Succeſs, without laying claim to more Thanks than are merited, is become not only a laudable thing, but a Favour.

5. In

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The being first in a Petition of no great weight.

5. In Suits of Favour, to give in the first Petition should be a thing of no weight; tho so far Regard may be had to the Fidelity of the first Petitioner, in making the Discovery, that if the Intelligence could not be otherwise procured, this should prove no Prejudice; but rather an Advantage to him. To be ignorant of the Value of the Thing sued for is Simplicity; as to neglect the Right thereof, argues a bad Conscience.

Cautions to be observed in petitioning.

6. Secrecy in Suing is a great means of obtaining; for to boast of Hopes, tho it may discourage some Competitors, will quicken others. But Opportunity is the principal thing in Suits; not only with respect to the Person, who has the Power of granting or refusing; but also with respect to those who are likely to cross the Petition. In the Choice of the Person to whom the Care of the Suit is committed, regard Fitness before Greatness; and rather employ one that engages but in certain matters, than one that grasps at all. A repeated Denial is sometimes equal to a Grant, if the Petitioner appears neither dejected nor discontented.

Where a great thing or a less should be asked.

7. *Ask a great thing to obtain a moderate one*, is a good Rule, where a Man stands well in Favour; otherwise it were better gradually to rise to the main thing intended: for he who would have ventured at first the Loss of his Suitor's Service, will not at last willingly lose both that and the Benefit of his Favours already conferr'd.

Letters of Recommendation.

8. It is thought a small matter to request the Recommendatory Letters of a great Person; yet if these be given in an unjust or dishonourable Cause, they detract so much from the Reputation of the Writer.

General Contrivers of Suits.

2. There is not a more pernicious Set of People in a State, than general *Contrivers of Suits*; for they are the Pest and Bane of publick Business.

ESSAY IX. *Of* NEGOTIATING.

When best to negotiate by Letter, and when in Person.

1. 'TIS generally better to negotiate by Speech, than by Letter; and by the Mediation of a third, than in ones own Person. Letters are useful, (1.) when an Answer is desired in Writing; (2.) when it may be of service to produce ones own Copies; and, (3.) lastly, when there is Danger of being interrupted in Discourse, or heard by Piece-meal. On the other hand, it is better to negotiate in Person, (1.) when a Man's Face is apt to strike an Awe; as it generally does in discoursing with Inferiors. (2.) In tender Points, where Direction may be taken by the Eye fixed upon the Countenance, how far to proceed: and, (3.) generally where a Man would reserve to himself a liberty, either of disowning or explaining.

The Persons to be employ'd in negotiating.

2. In negotiating by others it is more prudent to choose plain Men, and such as are likely to perform the Trust reposed in them; and faithfully report the Success; than such as are cunning at contriving, out of other Mens Business, somewhat of Honour or Advantage to themselves; and soften the Answer they bring back, in order to please. Employ also such Persons as affect the Business entrusted with them; for that is a Spur to Industry: and again,

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again, such as are fit for the thing they undertake; as bold Men for Expostulation; fair-spoken Men for Persuasion; crafty Men for strict Enquiry and Observation; refractory and somewhat absurd Men where matters are not quite fair, &c. Use also such as you have successfully employ'd before; for this breeds Confidence; and they will endeavour to maintain the Opinion conceived of them.

Directions for negotiating to advantage.

3. 'Tis more proper to sound a Person at a distance, than to fall directly upon the Point at first; except you mean to confound and surprize him by some short Question. It is better to negotiate with Men in pursuit, than with those who have obtained their Ends. If you negotiate with another upon Conditions, it is a principal Point who begins to perform first. This one cannot reasonably demand of another; unless the Nature of the thing requires it to precede; or we can dextrously persuade the other, that he will want our Assistance in something else; or unless ourselves are accounted Men of great Veracity and Integrity.

The Ways of moulding Men.

4. All Negotiating tends either to *discover* or to *effect*. Men discover themselves either in Confidence, Passion, Surprize, or of Necessity, when they want a proper Pretext. If you would mould a Man to your Turn, you must either well understand his Temper and Inclinations, and so lead him; or his Ends, and persuade him; or his Weakness, and so awe him; or else you must win over those that have greatest Interest in him, and so govern him.

How to negotiate with the Crafty.

5. In negotiating with subtile and crafty Persons, no regard must be had to their Words; unless you have their Ends and Intentions to interpret them by. It is also the best way to say little to them, and what they least expect.

Difficult Negotiations not to be hurried.

6. In all Negotiations of Difficulty, a Man must not hope to sow and reap at once; but should prepare Business, that it may ripen by degrees[u].

ESSAY X. *Of* PLANTATIONS.

Plantations heroical Works.

1. PLantations are eminent amongst ancient and heroical Works. When the World was young it produced more Children; but now it is old, it produces fewer: for we may reckon new Plantations to be the Children of more ancient Nations. I approve of those Plantations where one People is not destroy'd to make room for another: otherwise it is an Extirpation, not a Plantation.

Hasty Profits the Bane of Plantations.

2. Planting of Countries resembles the planting of Woods; which is attended with a Loss of twenty Years Profits, tho richly rewarded in the end. And the chief Bane of Plantations has been the sordid and hasty catching at Profit in the beginning. Quick Returns indeed are not to be neglected, so far as consists with the Good of the Plantation, but no farther.

3. 'Tis

[u] See the Doctrine of Business in the *De Augment. Scientiar.* SECT. XXIV.

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Not to people with Felons, Outlaws, &c.

3. 'Tis baſe and unproſperous to plant with the Scum of a People, Outlaws and condemn'd Malefactors. This alſo corrupts and deſtroys the Colony; for ſuch profligate Wretches will live like Vagabonds, and not work; but commit Outrages, conſume Proviſions, grow weary of the Place, and then write over to the Prejudice and Diſcredit of the Plantation.

The Trades to plant with.

4. Let the People carried over be chiefly Gardeners, Ploughmen, Labourers, Smiths, Carpenters, Joiners, Fiſhermen, Chirurgeons, Apothecaries, Cooks, Bakers, Brewers, and the like.

The Method of planting.

5. Firſt examine what kind of Eſculents and Potulents the Country yields ſpontaneouſly; as Cheſnuts, Walnuts, Pine-apples, Olives, Dates, Plumbs, Cherries, wild Honey, and the like. Then conſider what kinds of eſculent things the Soil will produce within the Year; as Parſnips, Carrots, Onions, Cabbage, Radiſhes, Melons, Pompions, Cucumbers, Jeruſalem-Artichoaks, Maiz, *&c.* Wheat, Barley, and Oats require too much Labour: but Peaſe and Beans may be begun with, both becauſe they require leſs Labour, and ſerve for Meat, as well as for Bread. Rice likewiſe yields a large Increaſe; and is alſo a kind of Meat. But there ſhould at firſt, be chiefly brought in, Plenty of Biſket, Oatmeal, Flower, Meal, *&c.* to ſerve, till Bread may be procured upon the Spot.

The Beaſts and Birds to be carried over.

6. For beaſts and Birds; take chiefly ſuch as are leaſt ſubject to Diſeaſes, and breed the faſteſt; as Swine, Goats, Cocks and Hens, Turkeys, Geeſe, Houſe-doves, Rabbits, and the like. Fiſhing muſt be cloſely follow'd; both for the Support of the Colony, and alſo for the Profit upon Exportation.

The Husbanding required in the Proviſions.

7. The Proviſions in a Plantation ſhould be almoſt as ſparingly diſtributed, as in a beſieged Town; that is, by a certain Allowance. And let the main part of the Ground be converted to Gardens or Corn-fields, for raiſing a common Stock, to be preſerv'd in publick Granaries, and diſpenſed in proportion; whilſt ſome Spots however remain for Particulars to exerciſe their Induſtry upon.

The Commodities to be ſought after.

8. Conſider likewiſe what Commodities the Country naturally yields, that the Exportation thereof to the beſt Market, may help (as in the Caſe of Tobacco at *Virginia*) to defray the Charge of the Plantation: provided this be not, as we before obſerved, to the untimely Prejudice of the Colony. Woods commonly abound in deſart Countries; and therefore Timber fit for Building, Shipping, and the like Uſes, may prove a capital Commodity. If there be Iron-ore, and Streams for Mills, Iron is an excellent Commodity where Wood abounds. The making of Bay-Salt by the Heat of the Sun ſhould be attempted, if the Climate be proper for it. The growing of vegetable Silk likewiſe upon the Spot is a gainful Buſineſs. Pitch of all ſorts may be made where there is Plenty of Firs and Pines. So again, Drugs and Sweet-woods, where they are found, yield conſiderable Profit. Pot-aſhes likewiſe may be gainful; and other things may be enquired after. But depend not too much upon Mines, eſpecially at firſt; for Mines are very

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very fallacious and expenſive, and by the pleaſing Hope they afford, apt to render the Planters indolent in other reſpects.

9. Let the Government of the Colony be committed to a ſingle Perſon, aſſiſted with Council: and let them have Commiſſion to exerciſe Martial Laws, with ſome Limitation. Above all, let Men make that Advantage of being in the Wilderneſs, as to have God always, and his Service, before their Eyes. The Government ſhould not depend upon too many Counſellors, and Undertakers in the Plantation; but upon a moderate Number; and thoſe rather of the Nobility and Gentry, than Merchants, who are too intent upon the preſent Gain. Let there be an abſolute Freedom from Cuſtoms and Impoſts, till the Plantation be grown ſtrong: and full liberty of exporting Commodities to all parts allowed; unleſs there be ſome weighty Reaſon to the contrary. *The Government of the Plantation.*

10. Let not the Colony be ſurcharged, by ſending Company after Company; but rather learn how they waſte; and only ſend Supplies proportionably; that the whole Number may live commodiouſly, without ſtruggling with Want. *The Colony not to be overſtock'd.*

11. The building too near the Sea or Rivers, in marſhy and damp Places, has proved very prejudicial to the Health of many Plantations: and therefore, tho it may be ſometimes proper to begin in ſuch Places, for the Convenience of Carriage, and other Advantages; yet build gradually up from the Water, towards the higher parts of the Country. It likewiſe imports the Health of the Plantation to have Plenty of Salt, for preſerving their Meat, which might otherwiſe often corrupt. *To build from the Sea.*

12. When a Plantation is carried on among Savages, amuſe them not wholly with Trifles; but oblige them by juſt and courteous Uſage; tho without abating of any neceſſary Guard. Neither procure their Favour by helping them to invade their Enemies: but to defend them when attack'd, may not be improper. 'Tis alſo of Uſe frequently to ſend over ſome of the Natives to the Mother-Country; that they may there ſee a much better Way of living than their own; and publiſh it to their Fellows at their Return. *The native Savages how to be treated.*

13. When the Plantation is grown to ſome Strength, it will be time to bring in Women; that the People may propagate within themſelves, and not always depend upon foreign Aſſiſtance. *When Women are to be admitted.*

14. 'Tis a moſt heinouſly wicked thing to forſake and abandon a Plantation once in Forwardneſs: for beſides the Diſhonour, 'tis mere Treachery, and being guilty of the Blood of many miſerable Men[w]. *A heinous thing to abandon an advanced Plantation.*

[w] See more upon this Subject in the Author's Letter to King *James*, concerning the *Planting of* Ireland, *Vol.* I. *Supplem.* V. See alſo the *Prudent Stateſman*, Vol. II. Supplem. XIII.

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ESSAY XI. *Of* INNOVATIONS.

Innovations the miſhaped Births of Time.

1. AS the Births of living Creatures appear ill-ſhaped at firſt; ſo do all Innovations, which are the Births of Time: and as the firſt Ennoblers of their Family generally out-ſhine their Deſcendants in Dignity; ſo the firſt good Precedent is ſeldom equall'd by the Imitation of After-ages. For Evil in human Nature has a natural Motion, which grows ſtronger by Continuance: whilſt Good, as in all forced Motion, is ſtrongeſt at firſt.

Medicine and Time Innovators.

2. Certainly every Medicine is an Innovation; and he who will not apply new Remedies, muſt expect new Diſtempers: for Time is the greateſt Innovator. And if Time, of courſe, alters Things for the worſe, and Prudence and Induſtry ſhall not endeavour to alter them for the better, what End will there be of the Evil?

The Advantages of Cuſtom and Change.

3. It muſt be allow'd, that what is ſettled by Cuſtom, tho leſs good; yet at leaſt is ſuited to the Times; and that things, which have long rolled together, are joined as it were by Confederacy: whereas new things do not ſo well ſuit with old; but tho they pleaſe by their Utility, yet diſturb by their Novelty and Non-conformity. And ſurely Novelties are like Strangers; more admired, and leſs favoured.

To be tenacious of Cuſtom as pernicious as Innovation.

4. All this is true, if Time ſtood ſtill; but on the contrary, it moves conſtantly round: whence a ſtiff and obſtinate Retention of Cuſtom is as turbulent as Innovation; and they who ſuperſtitiouſly reverence ancient Times, become a Scorn to the preſent. It were therefore proper for Men in their Innovations to imitate Time, which innovates greatly; but quietly, by Degrees, and almoſt imperceptibly. And this is certain, that Novelty comes unexpected, and adds ſomething to one Man, and takes away from another; whilſt he who receives Advantage by the Innovation, thanks Fortune and the Times: but he who is hurt by it, accuſes the Author of the Innovation.

New Experiments not to be raſhly tried in States.

5. 'Tis proper alſo not to try new Experiments in the political Body; unleſs the Neceſſity be urgent, or the Utility evident: and take great Care that the Deſire of Reformation may occaſion the Change; and not the Deſire of the Change plead for Reformation. Again, let all Novelty, tho it cannot perhaps be rejected, yet be held ſuſpected. And laſtly, as the Scripture directs, *Let us ſtand upon the old Paths, and ſee and ask for the good Way, and walk therein.*

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ESSAY XII. *Of* FACTIONS *or* PARTIES.

How to deal with Factions.

1. IT is an erroneous Opinion, tho generally receiv'd, that a Prince in governing his People, or a great Perſon in conducting his Affairs, ſhould have a principal regard to the prevailing Factions; as if this were a capital Point of Policy or Prudence. On the contrary, the prudential Talent is chiefly ſeen either in the Regulation of thoſe things which regard all Men equally, and wherein different Factions agree; or in ſoothing, reconciling, and treating with particular Perſons. The Conſideration of Factions is not however to be neglected. Men of low Fortune muſt, in their riſing, adhere to ſome Party: but the Great, who have Strength within themſelves, had better preſerve a Neutrality. And for Candidates to ſide ſo cautiouſly, as to ſeem of one Party without being obnoxious to the other, is finding a Way to Preferment thro the midſt of Factions.

The Procedure of Factions.

2. The lower and weaker Faction proves, generally, the firmer and more laſting in Conjunction: and it is often found, that a few who are obſtinate and reſolute, will in the end tire out and depreſs a more numerous moderate Faction. When one Faction is extinguiſhed, the other ſubdivides: as the Faction of *Lucullus* and the Nobles continued vigorous for ſome time, againſt that of *Pompey* and *Cæſar*; but when the Authority of the Senate and Nobles was ſunk, the Faction of *Cæſar* and *Pompey* ſoon broke. And the ſame holds in Civil, as well as Military Factions. Hence thoſe that are ſecond in Factions, often prove Principals when the Faction ſubdivides: But on the other hand, they frequently loſe all Power; for many a Man's Strength lies in Oppoſition; and when that ceaſes, he preſently ſlackens. 'Tis no leſs remarkable than common, for Men that have gained their Ends, and ſeated themſelves in the Place they courted, to ſide with the contrary Faction; thinking, perhaps, they are ſecure of the former Party, and are now prepared to purchaſe the other.

Traitors in Faction often ſucceſsful.

3. The Traitor in Faction generally ſucceeds beſt: for when matters have long hung balancing, ſome one going over to the contrary ſide, caſts the Scale, and obtains all the Thanks. To carry it evenly between two Factions, does not always proceed from Moderation; but ſometimes from Subtilty; (as a Man is conſtantly trueſt to his own Ends) and expecting to make an Advantage of both Parties. In *Italy* they ſuſpect the Pope, when they have *Padre commune* frequently in their Mouths; and obſerve it as a Sign that he is bent upon aggrandizing his own Family.

Kings not openly to ſide with any Faction.

4. Kings ſhould be very cautious of profeſſing and making themſelves of any Faction or Party with their Subjects: for Leagues of Confederacy within the State are always deſtructive to Monarchies; as introducing an Obligation ſuperior to that of Sovereignty, and making the King as one of us.

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Factions how to be govern'd by Princes.

5. When Factions are openly carried with a ſtrong Hand, 'tis a Sign of a declining Power in Princes; and greatly prejudices both their Authority and Buſineſs. The Motions of Factions, under Kings, ſhould be like the aſtronomical Motions of the inferior Orbs; where each Orb has its own proper Motion; but in the mean time, they all quietly revolve with the higher Motion of the *Primum Mobile*[x].

ESSAY XIII. *Of* SEDITIONS *and* TROUBLES.

The Prognoſticks of State-Tempeſts.

1. THE Shepherds of the People ſhould underſtand the Prognoſticks of State-Tempeſts; which are commonly greateſt when matters tend to an Equality: as the natural Tempeſts are greateſt about the *Equinox*. And as hollow Blaſts of Wind ſeemingly at a diſtance, and ſecret Swellings of the Sea, often precede a Storm; the Caſe is parallel in the Storms of a State[y]. Scandalous Libels; licentious and reflecting Diſcourſes, flying thick and openly; falſe Rumours every where ſpread, and greedily receiv'd, to the Diſadvantage of the Government, are certain Prognoſticks of Troubles. *Virgil*, in giving the Origin of Fame, makes her Siſter to the Giants[z]; as if Rumours were the Reliques of paſt Seditions: but they are alſo Preludes of Seditions to enſue. It is however well obſerved, that ſeditious Tumults, and ſeditious Rumours, differ but as Brother and Siſter, Male and Female; eſpecially when Matters are at ſuch a height, that the moſt meritorious Actions of the State, which ſhould give the greateſt Satisfaction, are miſconſtrued and traduced: for this ſhews the Envy to be great[a].

Rumours, how beſt ſuppreſſed.

2. But it does not follow, that becauſe theſe Rumours are a Sign of Troubles, therefore the ſuppreſſing of them with Severity is the Remedy; for they generally vaniſh ſooneſt when deſpiſed: whereas the earneſt Endeavour to check them, makes them laſt the longer.

Farther Prognoſticks of Seditions.

3. That kind of Obedience alſo, which, as *Tacitus* expreſſes it, *is readier to interpret than execute the Commands of the governing Power*; ſhould be ſuſpected[b]. To diſpute, canvaſs, and cavil with Commands, is attempting to ſhake off the Yoke, and offering at Diſobedience: eſpecially if in theſe Diſputes, they who are for the Direction, plead timorouſly and tenderly; whilſt they that oppoſe it, ſpeak obſtinately and audaciouſly.

Viz. *When Princes ſide with Parties.*

4. Again, (as *Machiavel* well obſerves) when Princes, who ought to act as common Parents, ſide with a Party; 'tis like the over-ſetting of a Boat by too much weight on one ſide. This appear'd remarkably in the Caſe of *Henry*

[x] See more upon this Subject, in the *Sapientia Veterum*, Vol. I. *ad finem. Sect.* 3. *paſſim.* See alſo the following Eſſay.

[y] ——— *Ille etiam cæcos inſtare Tumultus*
Sæpe monet, Fraudeſque & operta tumeſcere Bella.

[z] *Illam Terra parens, ira irritata Deorum,*
Extremam (ut perhibent) Cœo, Enceladoque Sororem
Progenuit. ———

[a] *Conflata magna Invidia, ſeu bene ſeu male Geſta premunt.*

[b] *Erant in officio, ſed tamen qui mallent mandata Imperantium interpretari, quam exequi.*

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Henry the Third of *France*; who from the firſt, would enter the League for extirpating the Proteſtants; when the ſame League ſoon after turned againſt himſelf. For when the Authority of Princes is made but an Acceſſary to a Cauſe, and another Bond ariſes ſtronger than that of Sovereignty, Kings begin to loſe their Authority.

When they loſe their Reverence.

5. Again, when Diſcords, Quarrels and Factions, ſhew themſelves openly and audaciouſly; 'tis a Sign that the Reverence of Government is loſt: For the Motions of the Great Perſons in a Government, ought to be as the ſuppoſed Motions of the Planets; every one of them carried ſwiftly by the higheſt Mover, and ſlowly in their own Motion. Therefore when the Great move violently in their own particular; or as *Tacitus* expreſſes it, regardleſs of the ruling Power[c]; 'tis a Sign the Orbs are out of frame. For Reverence is the Girdle of Princes, given by God, who threatens to unlooſe it: *I will looſen the Girdles of Kings.* Laſtly, when any of the four Pillars of Government; *viz. Religion*, *Juſtice*, *Counſel*, and *Treaſure*, are ſhaken or weaken'd, Men had need pray for fair Weather. But leaving theſe Prognoſticks to be farther illuſtrated by what follows; let us deſcend to examine, (1.) the *Matter*; (2.) the *Cauſes* or *Movers*; and (3.) the *Remedies* of *Seditions.*

The Matter of Sedition,

6. The *Matter* of Sedition is a Point to be well conſidered; the ſureſt means to prevent Sedition, being (if the Times will allow it) to remove the Matter of them. For if there be Fewel prepared, 'tis not eaſy to ſay from what Quarter the Sparks ſhall come to light it. The *Matter* of Sedition is of two kinds; great *Poverty* and great *Diſcontent*. For certainly there are as many Voices for Diſturbance, as there are ruined Eſtates and broken Fortunes. Hence that Obſervation of *Lucan*, as to the State of *Rome*, a little before the Civil War[d]: for when War is deem'd advantagious, this is an infallible Sign of a State diſpoſed to Seditions and Troubles. And if the Indigence or diminiſhed Fortunes of the firſt Rank, be joined with the utmoſt Want and Neceſſity in the common People, the Danger is imminent and great: For the worſt Rebellions are thoſe of the Belly.

Poverty,

and Diſcontent.

7. As for Diſaffections and Diſcontents, they are in the politick Body, what malignant Humours are in the natural; apt to generate præternatural Heats, and to inflame. And let no Prince meaſure his Danger by the Juſtneſs or Unjuſtneſs of theſe Diſaffections and Diſcontents; for that were to imagine the Vulgar too rational, who often ſpurn at their own Good: nor again by the ſmallneſs or greatneſs of the Grievances from whence they riſe; ſince thoſe are the moſt dangerous Diſcontents, where the Fear is greater than the Feeling: for Feeling has Bounds, but Fear has none[e]. Beſides, in great Oppreſſions, the things that provoke, at the ſame time abate the Courage: but in Fears it is otherwiſe. Neither let any Prince or State lightly

[c] *Liberius quam ut Imperantium meminiſſent.*

[d] *Hinc Uſura vorax, rapidumque in tempore Fœnus;*
Hinc concuſſa Fides, & multis utile Bellum.

[e] *Dolendi modus, Timendi non item.*

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lightly eſteem a Diſcontent, for having raged long or often, without Prejudice to the Government: for as every Vapour does not turn to a Storm; ſo Clouds, tho they often blow over, yet gather and fall in a Storm at laſt.

The Cauſes of Sedition. 8. The Cauſes of Sedition are, (1.) Innovation in Matters of Religion; (2.) Taxes and Impoſts; (3.) Alteration of Laws and Cuſtoms; (4.) Violation of Immunities and Privileges; (5.) General Oppreſſion; (6.) the advancing of unworthy Perſons; (7.) Admiſſion of Foreigners; (8.) Dearths; (9.) the diſbanding of Soldiers without a Proviſion; (10.) Factions grown deſperate; and, (11.) in ſhort, whatever offends the People, ſo as to make them unite and conſpire together in a common Cauſe.

Its Remedies. 9. As for *Remedies*, there are ſome general Preſervatives, which we ſhall here mention; but the juſt Cure is to be ſuited to the particular Diſeaſe; and muſt therefore be left to Council, rather than Precept. The firſt Remedy or Prevention of *Sedition*, is, by all poſſible means, to remove its material Cauſes, *Poverty* and *Diſcontent*[f]. To the removing of Poverty, tends, (1.) the opening and balancing of Trade; (2.) the introducing and ſupporting of Artificers and Handicraftſmen; (3.) the baniſhing of Sloth and Idleneſs; (4.) the ſuppreſſing of Luxury and Profuſion by ſumptuary Laws; (5.) the improving of Huſbandry; (6.) regulating the Prices of Commodities; (7.) moderating the Taxes, Duties, and the like.

The Prevention of Poverty by regulating Trade, &c.

Preventing a Surcharge of People. 10. In general, Care muſt be had that a Surcharge of Inhabitants, in Times of Peace, when none are cut off by the Sword, do not over-grow the Stock of the Kingdom, which ſhould maintain them. Nor are the People in this View to be eſtimated by Number only; for a ſmaller Number, that conſumes much, and gains little, wears out a State ſooner than a greater that lives ſparing, and lays up Money. And therefore an Over-proportion of Nobility and Gentry, ſoon impoveriſhes a State: ſo likewiſe does a numerous Clergy; for they bring nothing to the Stock. And the caſe is the ſame when more are bred Scholars, than the Civil Employs can maintain.

Trade conſiſts in three things. 11. We ſhould not omit, that as all Increaſe of publick Treaſure muſt of Neceſſity ariſe from foreign Countries (for whatever is gain'd in one Place, is loſt in another) there are but three things which one Nation can ſell to another; *viz.* (1.) the *natural Commodity*; (2.) the *Manufacture*; and (3.) the *Carriage* or *Freight*. So that if theſe three Wheels go well, Riches will flow as in a Spring-tide. And it often happens, according to the Poet's Obſervation[g], that the Manufacturing and Carriage exceed the Price of the Material, and prove more enriching to a State: as we ſee by an eminent Example in the *Dutch*, who have the richeſt Mines above Ground of any Nation.

12. Above

[f] See above, §. 6, 7.

[g] *Materiam ſuperabat Opus.*

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12. Above all things, good Policy must be used, to prevent the Treasure of a Kingdom from getting into few Hands; otherwise a State may starve in the midst of Wealth: for Money is, like Manure, unfruitful if not spread. This is principally effected by suppressing, or at least restraining those great Devourers, *Usury*, *Monopolies*, exorbitant Pasturage, and the like. *The Money of a Kingdom not to be engrossed.*

13. As for the removing of *Discontents*; at least the Dangers that might arise from them; we must observe, that as every State has two kinds of Subjects; *viz.* Nobles and Commons; if only one of these be discontent without the other, the Danger is not great; for the Vulgar are slow of Motion, unless excited by the Great: And again, the Great have little Strength, unless the People be disposed and ready to move of themselves. But the Danger is impending when the Great wait only for the *troubling of the Waters*, amongst the Multitude; that they may declare themselves. The Poets feign, that the Gods conspired to bind *Jupiter*; which he being apprized of, by the Counsel of *Pallas*, sent for *Briareus*, with his hundred Hands, to assist him. This Emblem doubtless admonishes Princes how safe and prudent it is for them to secure the Good-will of the People [h]. *The removing of Discontents.*

14. 'Tis a safe Way to indulge a moderate Liberty, for the *Discontent* to evaporate; provided it be not attended with Insolence and Audacity: for to turn the Humours back, and make the Wound bleed inwards, endangers malignant Ulcers, and pernicious Impostumations. *To give them vent.*

15. For softening of enraged and malevolent Spirits, the Part of *Epimetheus* might well be transferr'd to *Prometheus* [i]; as there is no better Remedy. *Epimetheus*, when he perceived Evils and Misfortunes fly out, at last clap'd on the Lid, and kept Hope in the bottom of the Box. Certainly the political and artificial keeping up and cherishing of Hopes, and leading Men round from Hope to Hope, is one of the strongest Antidotes against the Poison of Discontent. And there is no surer Sign of a wise Government, and prudent Administration, than where Mens Hearts are detained with Hopes, whilst Satisfaction cannot be given: And again, where Matters are managed with such Foresight, that no Misfortune can happen so adverse as not to have its Out-let of Hope. And this is the less difficult to provide for, because Factions, as well as private Persons, are apt to flatter themselves; or at least, to glory in more than they believe. *To feed Men with Hopes.*

16. It is, indeed, a common, but excellent Caution, for preventing Danger from Discontent, that there be no fit Head or Leader whereto the Disaffected may resort, and form a Body under his Protection. I understand by a fit Head or Leader, a Person of Nobility and Character, acceptable to the Malecontents; who turn their Eyes upon him, and believe him discontented in his own particular. Such Persons as these are either to *To suffer no fit Head of Faction.*

[h] See *Vol.* I. the *Sapientia Veterum*, *Sect.* 3. *passim.*
[i] See the Fable explained in the *Sapientia Veterum*, *Sect.* 1.

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to be won over, and reconciled to the State, in a firm and ſolid manner; or elſe to be oppoſed by others of the ſame Party, to divide the popular Eſteem.

To ſow Diſtruſt among Factions.

17. It is generally conceived no bad Remedy, to divide and break Combinations and Factions againſt the State, by ſetting them at variance with each other; or at leaſt by ſowing Diffidence among them: for it would be extremely hard upon Governments, if the Diſaffected to them ſhould continue entire and united; whilſt the Well-affected remain full of Diſſentions.

Princes to beware of ſhort poignant Sentences.

18. It is obſervable, that ingenious and ſharp Sayings falling inconſiderately from Princes, have ſometimes given Fire to Seditions. *Cæſar* gave himſelf a fatal Wound by that Saying, *Scylla neſcivit Literas, dictare non potuit* *: For this ſingle Sentence cut off all the Hope before entertain'd by the People, that he would in time reſign the *Dictatorſhip*. *Galba* ruin'd himſelf by that Saying, *Legi a te militem, non emi* †. For hence the Soldiers deſpaired of the Donatives. And *Probus* had no better Succeſs with that Expreſſion, *Si vixero non opus erit amplius Romano Imperio militibus* ‡. For this alſo was matter of Deſpair to the Soldiers; and there are many Inſtances of the like kind. Certainly it concerns Princes in tender Points, and tickliſh times, to be cautious of what they ſay; eſpecially in theſe ſhort Sentences, which fly abroad like Darts; and are thought to proceed from their ſecret Intentions. But large Speeches are flatter things; and not ſo much regarded [k].

Kings to have ſelect military Officers in conſtant waiting.

19. Laſtly, againſt all Events, let Kings have conſtantly near them, certain Perſons of approved military Valour, for the quelling of Seditions in their firſt Riſe; otherwiſe the Courts of Princes are in more Confuſion than is proper upon the firſt breaking out of Diſturbances: and the State labours under that kind of Danger which *Tacitus* thus expreſſes. *Such was the general Diſpoſition, that few durſt attempt the heinous Crime; more wiſhed it; but all permitted it to be committed* [l]. But let ſuch military Perſons be of great Fidelity, and high Eſteem, rather than factious or popular; and alſo have a good Underſtanding with the other Great Men of the State: or elſe the Remedy is worſe than the Diſeaſe [m].

* *That* Scylla could not *dictate* for want of Learning.

† *That* he did not buy, but raiſe the Army.

‡ If I live, the *Roman* Empire will have no farther need of Armies.

[k] See the Author's Collection of *Apophthegms*, Vol. I. *Supplem.* VI.

[l] *Atque is habitus animorum fuit, ut peſſimum Facinus auderent pauci, plures vellent, omnes paterentur.*

[m] See more upon this general Subject in the *Sapientia Veterum*, Vol. I. *Supplem.* VII. *Sect.* 3. *paſſim.*

ESSAY

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ESSAY XIV. *Of* UNITY *in* RELIGION.

1. AS Religion is the chief Bond of Society, 'tis proper that itſelf ſhould be bound in the true Bonds of Unity and Charity. Quarrels and Diſſentions about Religion were Evils unknown to the Heathens; their Religion conſiſting rather in Rites and Ceremonies, than in any fixed Belief and Confeſſion. For it is eaſy to conjecture what kind of Faith they had, when the chief Doctors and Fathers of their Church were the Poets. But it is an Attribute of the true God, that he is a jealous God; and therefore his Worſhip admits of no Mixture or Partner. We will therefore here ſpeak of the *Unity of the Church*; and conſider, (1.) what are the Fruits thereof; (2.) what the Limits; and (3.) what the Means of procuring this *Unity*.

Religion to be kept within the Bonds of Unity and Charity.

2. (1.) The principal *Fruits* of Unity (beſides its being highly pleaſing to God, which is firſt to be eſteem'd) are two; the one regarding thoſe without the Church, the other thoſe within. For the former; 'tis certain that Hereſies and Schiſms are the greateſt Scandals in the Church; even greater than Corruption of Manners: as in the natural Body, Wounds and Solutions of Continuity are worſe in kind than corrupt Humours. Whence nothing ſo much deters ſome Men from coming into the Church, and drives others out of it, as the Breach of Unity: and therefore, when the times are come that ſome ſay, *Ecce in Deſerto!* and others, *Ecce in Penetralibus!* that is, when ſome ſeek Chriſt in the Conventicles of Hereticks, and others in an outward Face of a Church, 'tis neceſſary to have this Voice continually ſounding in Mens Ears, *Go not out.*

Two Fruits of Unity in Religion.

Hereſies and Schiſms the greateſt Scandals in the Church.

3. St. *Paul*, whoſe peculiar Province it was to take care of the *Gentiles*, or thoſe without the Church, aſks this Queſtion: *If an Infidel, or unlearned Perſon, enters your Congregations, and hears you ſpeak with different Tongues; will he not ſay you are mad?* And certainly, 'tis little better, when Atheiſts, and prophane Perſons, ſee ſuch great Contentions, and ſo many claſhing Opinions in Religion. For this turns them from the Church; and makes them *ſit down in the Chair of the Scorners.* It may ſeem too trifling for ſo ſerious an Eſſay, to mention the following Particular; but it admirably deſcribes the Deformity of the Thing. A certain eminent Jeſter, in giving the Catalogue of a fabulous Library, puts down, among other Books, one with this Title: The *Morris-Dance* of *Hereticks*: for as every Morris-Dancer has his own peculiar ridiculous Motion, and deformed Geſture of Body; ſo has every Heretick his peculiar Humour and Deformity of Mind: which cannot fail of being ridiculed by Libertines, and depraved Politicians; who are apt to fall into a Contempt of holy Things.

Different Opinions of Hereticks occaſion Religion to be ridiculed.

4. As for the Fruit of Unity, redounding to thoſe within the Church; it is in one Word, *Peace*; which contains innumerable Bleſſings: for it eſtabliſhes

The Fruit of Unity within the Church.

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eſtabliſhes Faith, and kindles Charity: and the outward Peace of the Church diſtils by degrees into internal Peace of Conſcience; and turns the Labours of Controverſy-Writers, into Books of Piety, and Devotion.

The Limits of Unity.

5. (2.) As for the Limits of Unity; to place theſe juſtly, is of great Importance to the whole of Religion. There appear to be two Extremes in fixing them: For all mention of Peace is odious to Zealots. *Is it* Peace, *Jehu? What haſt thou to do with Peace? Follow me:* as if *Peace* were nothing, but *Party* all. On the other hand, certain Perſons, lukewarm in the Cauſe of Religion, like the *Laodiceans*, think to dreſs up agreeable Summaries of Religion, by going in a middle way, ingeniouſly accommodating Opinions, and acting as Reconcilers between God and Man. Both theſe Extremes are to be avoided; and may be, by clearly underſtanding and diſtinguiſhing between thoſe two Points of the Covenant of Chriſtians, laid down by our Saviour himſelf, which at firſt ſight ſeem to claſh; *viz. He that is not with us, is againſt us:* and again, *He that is not againſt us, is with us:* that is, if the truly eſſential and fundamental Points of Religion, were juſtly diſcerned and diſtinguiſhed from thoſe that are, not of Faith, but of probable Opinion, or pious Intention; and deſign'd for the ſake of Order, and the Government of the Church. This may appear trivial to many; and a matter done already: but if done with leſs regard to Party, it would be more generally receiv'd.

Two kinds of Controverſy to be avoided in Religion; viz. the lighter,

6. Let Men beware of rending God's Church by two kinds of Controverſies: The *one*, when the Point controverted is ſmall and trifling, not deſerving the Contention raiſed about it; but inflamed merely by Oppoſition. For, as one of the Fathers elegantly obſerv'd, *the Coat of Chriſt was without Seam; but the Church's Veſture of various Colours:* then adds, *Let the Variety of the Garment continue, and no Rent be made.* For *Unity* and *Uniformity* are widely different.

and the more ſubtile.

7. The *other* kind of Controverſy is, when Subject has Weight, but is reduced to too great Subtilty and Obſcurity; ſo that it becomes a thing rather ingenious than ſubſtantial. A Man of Learning and Underſtanding may ſometimes hear unſkilful Perſons differ about a Queſtion, and ſee clearly that they think alike, and mean the ſame thing; tho they themſelves would never agree. And if this may ſometimes happen between Man and Man, where there is ſo little Diſparity of Judgment, is it not reaſonable to believe that God, who ſearches and knows the Heart, clearly perceives that frail Men, in ſome of their Controverſies, think alike, and graciouſly accepts of both? The Nature and Character of ſuch Controverſies are admirably expreſſed by St. *Paul*, in his Admonition and Precept about them: *Avoid prophane and vain Bablings; and Oppoſitions of Science, falſly ſo called.* Men imagine Oppoſitions, which in reality do not exiſt; and couch them in new Terms, which they make ſo fixed and invariable, that tho the Meaning ought to govern the Term, the Term here governs the Meaning[n].

8. There

[n] See the *Novum Organum*, Part I. Sect. II.

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8. There are alſo two *falſe Unities*; the one grounded upon an implicit Ignorance; for all Colours will agree in the dark: The other pieced up of Expoſitions, directly contrary, in fundamental Points. For Truth and Falſhood are like the Iron and Clay in the Toes of the Image that *Nebuchadnezzar* ſaw in a Dream: they may cleave, but not incorporate. *Two falſe Unities.*

9. (3.) For the *Means of procuring Unity*; let Men beware, whilſt they ſecure and guard an Unity of Religion, they do not diſſolve and demoliſh the Laws of Charity, and Society. There are but two Swords received amongſt Chriſtians, the *Spiritual* and *Temporal*; and both have their Place and Office in propagating and protecting the Chriſtian Religion. But the third Sword, which is that of *Mahomet*, ſhould never be taken up; that is, Religion muſt never be propagated by War; or the Conſciences of Men forced by ſanguinary Perſecutions; unleſs in Caſes of open Scandal, inſolent Blaſphemy, or Plots and Practices againſt the Civil State: much leſs to abet Seditions; ſpirit up Conſpiracies and Rebellions; put the Sword into the Peoples Hands, and the like: all which manifeſtly tend to leſſen the Authority, and ſubvert the Foundation of lawful Government, which is the *Ordinance* of *God*. For this is to break the firſt Table againſt the ſecond; and to conſider Chriſtians, ſo as to forget they are Men. *The Means of procuring Unity.*

10. *Lucretius*, placing before his Eyes *Agamemnon* ſacrificing his own Daughter, exclaims, *Tantum Religio potuit ſuadere malorum* !* But what would he have ſaid, had he known of the Maſſacre in *France*; or the Powder-Plot in *England?* Surely he would then have been a greater *Atheiſt* and *Epicurean* than before! For as the temporal Sword is to be drawn with great Judgment and Circumſpection in the Cauſe of Religion; 'tis monſtrous to put it into the Peoples Hand. Let this be left to the *Anabaptiſts*, and other Furies. It was a great Blaſphemy, when the Devil ſaid, *I will aſcend, and be like the moſt High:* but it is a greater to perſonate God, and bring him in ſaying, *I will deſcend, and be like the Prince of Darkneſs:* yet what difference is there betwixt this, and making the Cauſe of Religion deſcend headlong to the cruel and execrable Acts of murthering Princes, maſſacring People, and ſubverting States? Surely this is like bringing down the Holy Ghoſt in the Form of a Vulture or a Raven, inſtead of a Dove! or like hoiſting the Flag of Pyrates and Aſſaſſins on board the Ship of the Church! It is therefore juſt, and required by the Neceſſity of the Times, that the Church by its Doctrine and Decrees; Princes by their Sword; and all Learning, both religious and moral, ſhould endeavour, as by their *Mercury*-Rod, to charm down and confine to the infernal Regions, for ever, all Facts and Opinions tending to encourage and ſupport theſe Practices; as in good meaſure has been already done. It were to be wiſhed, that in Councils convened upon the Affair of Religion, this Admonition of the Apoſtle hung up to open View; *The Wrath of Man worketh not the* *Perſecution, how to be oppoſed.*

* Could e'er Religion lead to ſo much Ill?

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Righteousness of God. And to say the Truth, it was excellently and prudently observed by a very wise Father of the Church; and spoke with great Sincerity and Ingenuity, that *they who advise the straining and forcing of Consciences, only cover their own Passions under that Pretence; and think their Interest concerned in the thing*°.

°, See the whole of this Subject farther prosecuted in the Author's Discourse upon promoting the Peace of the Church, *Supplem.* XVII.

SUP-

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SUPPLEMENT XII.

A

DISCOURSE

OF

WAR:

On Occaſion of a WAR *with* SPAIN.

A

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A DISCOURSE OF WAR, &c.

INTRODUCTION.

YOUR Highneſs [p] has an imperial Name. It was a *Charles* that brought the Empire firſt into *France*; a *Charles* that brought it firſt into *Spain*; why ſhould not *Great Britain* have its Turn? But to lay aſide all that may ſavour of Fume or Fancy, and to ſpeak Solids: *A War with Spain* is a great Work; it requires ſtrong Materials and active Motions. He who ſays otherwiſe is zealous; but not according to Knowledge. Yet *Spain* is no ſuch Giant: and he who thinks *Spain* a great Over-match for this Kingdom, aſſiſted as it is, and may be, is no good Aſſay-maſter; but takes Greatneſs of Kingdoms according to their Bulk and Currency; and not according to their intrinſick Value. Altho, therefore, I had wholly ſequeſtred my Thoughts from Civil Affairs; yet becauſe 'tis a new Caſe, and concerns my Country infinitely, I obtain'd of my ſelf to ſet down, out of long continued Experience in Buſineſs of State, and great Converſation in Books of Policy and Hiſtory, what I thought pertinent to this Buſineſs; and in all Humility preſent it to your Highneſs; hoping that at leaſt you will diſcern the Strength of my Affection, thro the Weakneſs of my Abilities: for the *Spaniard* has a good Proverb; *There is no Heat of Affection but is joined with ſome Idleneſs of Brain* [q].

[p] This Piece was dedicated to Prince *Charles* in the Year 1624.
[q] *De Suario ſi empre con la calentura.*

SECT.

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SECT. I.

Of the just CAUSES *of* WAR.

The Requisites of a War.

1. TO a War are required; (1.) a just Quarrel; (2.) sufficient Forces and Provisions; and (3.) a prudent Choice of the Design. So that I will *first* justify the Quarrel; *secondly*, balance the Forces; and *lastly*, propose a Variety of *Designs* for the Choice; but not advise the Choice; for that were unfit for a Writing of this Nature: nor is it a Subject within the Level of my Judgment; I being in effect, a Stranger to the present Occurrences[r].

Three Grounds of War.

2. Wars, where not ambitious and predatory, are *Suits of Appeal* to the Tribunal of God's Justice, when there are no Superiors on Earth to determine the Cause. And they are as Civil Pleas, *Plaints* or *Defences*. There are therefore *three just Grounds of a War with* Spain; one upon Plaint, and two upon Defence. *Solomon* says, *A Cord of three is not easily broken:* but especially when every one of these Lines will hold single by itself. They are these: (1.) *the Recovery of the Palatinate*; (2.) *a just Fear of the Subversion of our Civil State*; and (3.) *a just Fear of the Subversion of our Church and Religion.* For in the handling of the two last Grounds of War, I shall make it plain, that preventive Wars upon just Fears, are true Defensives; as well as upon actual Invasions: and again, that defensive Wars for Religion, are most just; tho offensive Wars for Religion are seldom or never to be approved, unless they have some Mixture of Civil Titles. But all that I shall say in this Argument, will be like Thread in the Bottom, which with a good Needle may be flourished into large Works.

The first Ground.

I. 3. For asserting the Justice of the Quarrel, the recovery of the *Palatinate*; I shall not go so high as to discuss the Right of the War of *Bohemia*; which if freed from Doubt on our Part, there is no Colour nor Shadow why the *Palatinate* should be retained; the ravishing whereof was a mere Excursion of the first Wrong, and a double Injustice. But I do not take my self to be so perfect in the Customs, Transactions and Privileges of that Kingdom of *Bohemia*, as to treat this Part properly: and will not offer at what I cannot master. Yet this I must say positively, and resolutely; that 'tis impossible an elective Monarchy should be so free and absolute as an hereditary; no more than 'tis possible for a Father to have so full Power and Interest in an adopted Son, as in a natural one: *because a natural Obligation is stronger than a civil.* And again, that received Maxim is almost unshaken and infallible; *There is nothing more agreeable to Nature, than that Things should be dissolved by the same means they were constituted.* So

[r] The third Part was not published.

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So that if the Part of the People or State be ſomewhat in the Election, you cannot make them Cyphers in the Privation or Tranſlation.

4. If it be ſaid that this is a dangerous Opinion for the Pope, Emperor, and elective Kings; true, 'tis a dangerous, and ought to be a dangerous Opinion, to ſuch perſonal Popes, Emperors, or elective Kings, as ſhall tranſcend their Limits, and become tyrannical: but it is a ſafe and ſound Opinion for their Sees, Empires, and Kingdoms; and for themſelves alſo, if they be wiſe: For *a Plenitude of Power is a Plenitude of Commotion*[f]. But the chief Reaſon why I do not ſearch into this Point is, becauſe I need it not. And in handling the Right of a War, I am unwilling to intermix doubtful Matter with that which is out of doubt. For as in capital Cauſes, where but one Man's Life is in queſtion, the Evidence ought to be clear; ſo much the more in a Judgment upon a War, which is capital to thouſands. I ſuppoſe therefore the worſt; that the offenſive War upon *Bohemia* had been unjuſt; and then put the Caſe: which is no ſooner put than reſolved; if not enwrapped, but ſtated plainly and perſpicuouſly. *The Judgment upon a War to be clear.*

5. 'Tis this. An offenſive War is made, which is unjuſt in the Aggreſſor; the Proſecution and Courſe of the War, carries the Defendant to invade the ancient and undoubted Patrimony of the firſt Agreſſor, who is now turned Defendant: ſhall he ſit down, and not put himſelf in defence? Or if he be diſpoſſeſſed, ſhall he not make a War for the Recovery? No Man is ſo poor of Judgment as to affirm it. *The Caſe ſtated.*

6. The Caſtle of *Cadmus* was taken, and the City of *Thebes* itſelf inveſted by *Phoebidas* the *Lacedemonian*, inſidiouſly, and in Violation of the League: the Proceſs of this Action drew on a Re-ſurprize of the Caſtle by the *Thebans*, a Recovery of the Town, and a Current of the War, even to the Walls of *Sparta*. I demand, Was the Defence of the City of *Sparta*, and the Expulſion of the *Thebans* out of the ancient *Laconian* Territories unjuſt? The ſharing of that part of the Dutchy of *Milan*, which lies upon the River of *Adda*, by the *Venetians*, upon Contract with the *French*, was an ambitious and unjuſt Purchaſe. This Wheel ſet on going, poured a War upon the *Venetians* with ſuch a Tempeſt, that *Padua* and *Trevigi* were taken from them, and all their Dominions upon the Continent of *Italy* abandoned, and they confined within the Salt Waters. *Exemplified.*

7. Will any Man ſay, that the memorable Recovery and Defence of *Padua*, when the Gentlemen of *Venice*, unuſed to Wars, but from the Love of their Country became brave and martial the firſt Day; and ſo likewiſe the re-obtaining of *Trevigi*, and the reſt of their Dominions, was matter of ſcruple, whether juſt or no; becauſe it aroſe from a Quarrel ill begun? The War of the Duke of *Urbin*, Nephew to Pope *Julius* the Second, when he made himſelf Head of the *Spaniſh* Mutineers, was as unjuſt as unjuſt could be; a Support of deſperate Rebels; an Invaſion of St. *Peter*'s Patrimony; and what you will. The Courſe of this War fell upon the Loſs of *Urbin* itſelf, which was the *Duke*'s undoubted Right;

[f] *Plenitudo poteſtatis, eſt plenitudo tempeſtatis.*

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yet in this Caſe no Penitentiary, tho he had enjoin'd him ever ſo ſtrict Penance to expiate his firſt Offence, would have counſelled him to have given over the Purſuit of his Right for *Urbin*; which afterwards he proſperouſly re-obtained, and has tranſmitted to his Family to this Day. Nothing more unjuſt than the Invaſion of the *Spaniſh Armada* in *eighty-eight* upon our Seas; for our Land was Holy Land to them; they might not touch it: ſhall I ſay therefore, that the Defence of *Lisbon*, or *Cales*, afterwards, was unjuſt?

Wars are Revenges and Reparations.

8. There are thouſands of Examples; but it were unneceſſary to produce them in an undoubtful Caſe. The Reaſon is plain; Wars are Revenges and Reparations. But Revenges are not infinite; but according to the meaſure of the firſt Wrong. Therefore when a voluntary offenſive War, by the Deſign or Fortune of the War, is turned to a neceſſary defenſive War, the Scene of the Tragedy is changed; and it is a new Act to begin. For the particular Actions of War, tho complicated in Fact, are yet ſeparate and diſtinct in Right; like *croſs Suits* in *Civil Pleas*, which are ſometimes both of them juſt. But this is ſo clear as to need no farther Proof. Yet if in things ſo clear, it were fit to ſpeak of more or leſs clear in our preſent Cauſe; 'tis the more clear on our part, becauſe the Poſſeſſion of *Bohemia* is ſettled with the Emperor. For tho it be true, *that there is no compenſation of Injuries*; yet were there ſomewhat more Colour to detain the *Palatinate*, as in the Nature of a Recovery, in Value or Compenſation, if *Bohemia* had been loſt, or were ſtill the Seat of the War.

The Title of Proſcription.

9. As for the Title of Proſcription or Forfeiture, wherein the Emperor, upon the matter, has been Judge and Party, and juſticed himſelf; God forbid but that it ſhould well endure an Appeal to a War. For certainly the Court of Heaven is as well a *Chancery* to ſave and debar Forfeitures, as a Court of *Common-Law* to decide Rights: and there would be Work enough in *Germany*, *Italy*, and other Parts, if imperial Forfeitures ſhould go for good Titles. And thus much for the *firſt Ground of a War with Spain*, being in the Nature of a *Plaint* for the Recovery of the *Palatinate*; omitting here, what might be the Seed of a larger Diſcourſe, and is verified by a Number of Examples; that whatever is gained by an abuſive Treaty, ought to be reſtored to the full. We ſee the daily Experience of this in Civil Pleas; and the Images of great things are beſt ſeen contracted in ſmall Glaſſes. Thus all *Prætorian Courts*, if any of the Parties be entertained or laid aſleep, under Pretence of Arbitrement or Accord; and the other Party, during that time, cauteloufly gets the Start and Advantage at *Common-Law*, tho it be to Judgment and Execution; yet the *Prætorian Court* reſtores all things to their former State, without any reſpect to ſuch Eviction or Diſpoſſeſſion.

The Seat of a War free after Indiction.

10. Laſtly, let there be no Miſtake; as if when I ſpeak of a War for the Recovery of the *Palatinate*, I meant that it muſt be directly upon that Place: for look into the *Fecial Law*, and all Examples, and it will be found, without Scruple, that after a Legation for Recovery, and a Refuſal, and a Denunciation or Indiction of a *War*, the *War* is no more confined

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confined to the Place of the Quarrel; but left at large, and to choice, as Opportunities and Advantages ſhall invite.

II. 11. To proceed, therefore, to the *ſecond Ground* of a War with *Spain*; we have ſet it down to be, *a juſt Fear of the Subverſion of our Civil State.* So that the War is not for the *Palatinate* only, but for *England*, *Scotland*, *Ireland*, our King, our Prince, our Nation, and all that we have. Wherein two things are to be proved: the one, that a juſt Fear, without an actual Invaſion or Offence, is a ſufficient Ground of War; and in the nature of a true Defenſive: the other, that we have, with regard to *Spain*, Cauſe of juſt Fear. I ſay, juſt Fear: for as the Civilians well define, that the legal Fear, in private Cauſes, is *a juſt Fear in a couragious Man*[t]; ſo in publick Cauſes, there is *a juſt Fear in a couragious Senate*[u]; not out of Umbrages, light Jealouſies, or Apprehenſions afar off, but out of clear Fore-ſight of imminent Danger. *The ſecond Ground of War*; viz. *a juſt Fear.*

12. As to the *former Propoſition*, 'tis proper to hear what Time ſays. *Thucydides*, in his Hiſtory of the great *Peloponneſian* War, ſets down in plain Terms, that the true Cauſe of that War was the over-growing Greatneſs of the *Athenians*; and the Fear that the *Lacedemonians* ſtood in thereby: and doubts not to call it a Neceſſity impoſed upon the *Lacedemonians* of a War; which are the Words of a mere Defenſive: adding that the other Caſes were but ſpecious and popular. *The trueſt Cauſe of this War, tho leaſt voiced, I conceive to have been this; that the* Athenians *being grown great, to the terror of the* Lacedemonians, *impoſed upon them a Neceſſity of a War: but the Cauſes voiced abroad were theſe*, &c. *Exemplified.*

13. *Sulpitius Galba*, the Conſul, when he perſuaded the *Romans* to a preventive War, with the later *Philip*, King of *Macedon*, in regard of the great Preparations which *Philip* had then on foot, and his Deſigns to ruin ſome of the Confederates of the *Romans*, confidently ſays, that they who took it for an offenſive War, underſtood not the State of the Queſtion. *Ye ſeem to me, O* Romans, *not to underſtand, that the Conſultation before you is not, whether you ſhall have War or Peace*; (*for* Philip *will take care you ſhall be no Chooſers, who prepares a mighty War both by Land and Sea*;) *but whether you ſhall tranſport the War into* Macedon, *or receive it into* Italy. *Antiochus*, when he incited *Pruſias*, King of *Bithynia*, at that time in League with the *Romans*, to join with him in War againſt them, ſets before him a juſt Fear of the over-ſpreading Greatneſs of the *Romans*; comparing it to a Fire that continually ſpread from Kingdom to Kingdom: ſaying *that the* Romans *came to pull down all Kingdoms, and make the State of* Rome *an univerſal Monarchy*; *that* Philip *and* Nabis *were already ruin'd, and now was his turn to be aſſailed*; *ſo that as every State lay next to the other that was oppreſſed, ſo the Fire perpetually ſpread.* Where it is to be well noted, that towards ambitious States, which aſpire to great Monarchies, and ſeek upon all Occaſions to enlarge their Dominions, all particular Fears grow and multiply from a View of the general Courſes and

[t] *Juſtus metus, qui cadit in conſtantem virum.*
[u] *Juſtus metus, qui cadit in conſtantem Senatum.*

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Practice of ſuch States. Therefore in Deliberations of *War* againſt the *Turk*, it has been often, with great Judgment, maintain'd, that Chriſtian Princes and States have always a ſufficient Ground of an invaſive War againſt the Enemy; not for the Cauſe of Religion, but upon a juſt Fear; as it is a fundamental Law, in the *Turkiſh* Empire, that they may without any other Provocation make War upon Chriſtendom, for the Propagation of their Law; ſo that the Chriſtians lie under a perpetual Dread of a War from them; and therefore they may at all times be upon the preventive.

Strengthened by Authorities.

14. *Demoſthenes* derided *Wars* which are not preventive; comparing thoſe that make them to Country-Fellows in a Fencing-School, who never parry till the Thruſt is given. You *Athenians make War with* Philip, *as ignorant Ruſticks fence; for with them, he that gets a Hit, directly falls to guarding againſt another in the ſame place; and if hit again in a different place, thither his Guard goes likewiſe; but has neither the Skill nor Intention to foreſee the Stroke, nor to guard againſt it.*

15. *Clinias* the *Candian*, in *Plato*, ſpeaks deſperately and wildly, as if there were no ſuch thing as Peace between Nations; but that every Nation only waits its Advantage to make War upon another. Yet in this extravagant Speech thus much may have a civil Conſtruction; that every State ought to ſtand upon its Guard, and rather prevent, than be prevented. The Words are theſe; *What Men generally mean by Peace, is but a naked and empty Name: the Truth is, that all States are ever at a ſecret War.* I know that this is the Objection, not the Deciſion; and is afterwards confuted: yet it bears thus much of Truth, that if the general Malignity and Prediſpoſition to War, which he falſly repreſents to be in all Nations, is produced and extended to a juſt Fear of being oppreſſed, then it is no more a *true Peace*, but the *Name of a Peace*.

By the Policy of the wiſeſt Nations.

16. The Opinion of *Iphicrates*, the *Athenian*, demands not ſo much as a juſt Fear to a War; but rather approaches the Opinion of *Clinias*; as if there were among Nations a Brooding of a War; and that there is no ſure League, but a want of Power to hurt. For in the Treaty of Peace with the *Lacedemonians*, he ſpeaks plain, and tells them; *There could be no true and ſecure Peace, except the* Lacedemonians *yielded to thoſe things, which, when granted, it would be no longer in their Power to hurt the* Athenians, *tho they would.* And to ſay truth, if we mark it well, this was in all Hiſtory the main Piece of Wiſdom, in ſtrong and prudent Councils, to be on perpetual Watch, that the States about them ſhould neither by Approach, nor by Increaſe of Dominion, nor by ruining Confederates, nor by blocking of Trade, nor by any the like means, have it in their Power to annoy the State; and whenever any ſuch Cauſe did but appear, immediately to buy it out with War; and never to take up Peace at Credit, and upon Intereſt.

Princes.

17. 'Tis freſh in every ones Memory, how that Triumvirate of Kings, *Henry* VIII. of *England*, *Francis* I. of *France*, and *Charles* V. Emperor and King of *Spain*, were in their times ſo provident, as that ſcarce a Palm of Ground could be got by either, but the other two would do their beſt to,

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to ſet the Balance of *Europe* upright again. And the like Diligence was uſed in the Age before, by that League (wherewith *Guicciardine* begins his Hiſtory, and makes it, as it were, the Calendar of the good Days of *Italy*) which was contracted between *Ferdinando*, King of *Naples*, *Lorenzo* of *Medici*, Potentate of *Florence*, and *Lodovico Sforza*, Duke of *Milan*, deſign'd chiefly againſt the growing Power of the *Venetians*; yet ſo as the Confederates had a perpetual Eye upon one another, that none of them ſhould overtop. And however ſome School-men, (otherwiſe revered Men, yet fitter to guide Pen-knives than Swords,) ſeem preciſely to ſtand upon it, that every offenſive War muſt be a Revenge, that preſuppoſes a Precedent, Aſſault, or Injury; yet they do not deſcend to this Point, of a juſt Fear: nor are they of Authority to judge the Queſtion againſt all the Precedents of Time. For certainly as long as Men are Men, the Sons of *Prometheus*, and not of *Epimetheus*[w], and as long as Reaſon is Reaſon, a juſt Fear will be a juſt Cauſe of a preventive War: but eſpecially if it be part of the Caſe, that there is a Nation manifeſtly detected aſpiring to Monarchy and new Acquiſitions; then other States cannot be juſtly accuſed for not waiting the firſt Blow; or for not accepting *Polyphemus*'s Courteſy to be the laſt that ſhall be eaten up.

18. Nay, in that Paſſage of *Plato*, above cited, *a juſt Fear is juſtified for a Cauſe of an invaſive War*; tho the Fear proceed not from the Fault of the Foreign State to be attacked: for it is there inſinuated, that if a State, thro the Diſtemper of its own Body, fears Seditions, and inteſtine Troubles, in its own Bowels, it may diſcharge its ill Humours, by a foreign War, for a Cure. And this kind of Cure was tender'd by *Jaſper Coligni*, Admiral of *France*, to *Charles* IX. of that Kingdom; when by a vigorous and forcible Perſuaſion, he moved him to a War upon *Flanders*, for the better extinguiſhing the Civil Wars of *France*.

19. But neither was the Counſel proſperous, nor will I maintain the Poſition; for I never ſet *Politicks* againſt *Ethicks*; eſpecially as true *Ethicks* are but like a Hand-maid to Divinity and Religion. St. *Thomas*, who had the largeſt Heart of all the School-Divines, bends his Style chiefly againſt the depraved Paſſions which reign in the making of Wars; ſpeaking thus out of St. *Auguſtine*: *The Deſire of Injuring, the Cruelty of Revenge, an implacable Spirit, the Savageneſs of Rebellion, the Thirſt of Rule*, &c. *are all juſtly blamed in Wars*. And the ſame St. *Thomas*, in his own Text, defining the juſt Cauſes of a War, leaves it upon very general Terms thus: *A juſt Cauſe is required in War; and that the Invaded, thro ſome Fault, ſhould have deſerved the Invaſion.* And ſo much for the *firſt Propoſition, that a juſt Fear is a juſt Cauſe of a War: and that a preventive War is a true defenſive.* *Divines.*

20. The *ſecond* or *minor Propoſition* was; *that this Kingdom has a juſt Cauſe to fear an Overthrow from* Spain. And here it is true, that Fears are ever ſeen in dimmer Lights than Facts: as on the other ſide, Fears are often repreſented in ſuch an imaginary manner, as rather to dazzle Mens Eyes, than open them. I will therefore ſpeak as the Subject requires; that is, probably, *That* Britain *has a juſt Cauſe of Fear from* Spain.

[w] See the Fable of *Prometheus*, in the *Sapientia Veterum*, *Sect.* I. *Fab.* 2.

probably, moderately, and briefly; without deducing these Fears to present Occurrences; but point only at general Grounds, leaving the rest to more secret Counsels.

The Increasing Power of Spain.

Is it nothing, that the Crown of *Spain* has enlarged its Bounds, within this last six-score Years, much more than the *Ottomans*? I speak not of Matches or Unions, but of Arms, Occupations, and Invasions. *Granada*, *Naples*, *Milan*, *Portugal*, the *East* and *West-Indies*; all these are actual Additions to that Crown. They had a mind to *French Britain*, and the lower part of *Picardy* and *Piedmont*; but they have let fall their Bit. They have, at this Day, such a hovering Possession of the *Valtoline*, as a *Hobby* has over a *Lark*; and the *Palatinate* is in their Talons: so that nothing is more manifest, than that *Spain* runs a Race of Empire; whilst all other States of Christendom in effect stand still. Look next into the Titles whereby they have acquired, and now hold these new Portions of their Crown; and you will find them of so many Varieties, and such Natures, as may, to speak with due respect, be easily minted; and such as can hardly at any time be wanting: and, therefore, so many new Conquests and Purchases; so many Strokes of the Alarum-Bell of Fear, and awaking to other Nations. And the Facility of the Titles, which hand over head have served their turn, rings the Peal so much the sharper and the louder.

The Eye of Spain *upon* England, *from without.*

21. Shall we descend from their general Disposition of enlarging their Dominions, to the particular Disposition and Eye of Appetite, which they have had towards us? They have now twice sought to possess themselves of this Kingdom of *England*; once by Marriage with Queen *Mary*, and again by Conquest in *eighty-eight*; when their Forces by Sea and Land were not inferior to those they have now. And at that time, the Counsel and Design of *Spain* was by many Advertisements reveal'd and laid open to be, that they found the War upon the *Low-Countries* so churlish and tedious, that they grew to a Resolution, that as long as *England* remain'd able to succour those Countries, they should but consume themselves in an endless War; and therefore there was no other way, but to invade and depress *England*, which was as a Back of Steel to the *Flemmings*. And who can warrant that the same Counsel and Design will not return again? So that we are in a strange Dilemma of Danger: for if we suffer the *Flemmings* to be ruined; they are our Out-work, and we shall remain naked and dismantled: if we succour them strongly, as we ought, and set them upon their Feet, and do not withal weaken *Spain*, we hazard changing the Scene of the War, and turning it upon *Ireland* or *England*: like Rheums and Defluxions, which, if you apply a strong Repercussive to the Part affected, and do not take away the Cause, will shift and soon fall upon another. They have also twice invaded *Ireland*; once under the Pope's Banner, when they were defeated by the Lord *Gray*: and afterwards in their own Name, when they were defeated by the Lord *Mountjoy*. And let this suffice for a Taste of their Disposition towards us.

22. But it will be said, this is an *Almanack* for the old Year: since eighty-eight all has been well; and that *Spain* has not invaded this Kingdom, tho highly

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highly provoked by two several Invasions from us. 'Tis true; but then consider, that immediately after eighty-eight, they were long embroil'd in the Protection of the League of *France*, whereby they had their Hands full: and after being brought extreme low, by their vast and continual Enterprizes, they were forced to be quiet, that they might take Breath, and make Reparations upon their former Wastes. But now of late, things seem to come on apace to their former State; nay, with far greater Disadvantage to us: for now that they have almost continued, and, as it were, arched their Dominions from *Milan*, by the *Valtoline* and *Palatinate*, to the *Low-Countries*; we see how they thirst and pant after the utter Ruin of those States; having the *German* Nation almost in Contempt, and fearing little Opposition, except from *England*: whereby either we must suffer the *Dutch* to be ruined, to our manifest Prejudice; or put it to the hazard that *Spain* will throw at the fairest.

23. Neither is the Point of internal Danger, which grows upon us, to be forgot; *viz.* that the Papists in *England* are become more knotted, both in Dependance towards *Spain*, and among themselves, than they have been. Where again comes to be remember'd the Case of eighty-eight; for then also it appear'd by diverse secret Letters, that the Design of *Spain* was, for some Years before the Invasion, to prepare a Party in this Kingdom that should adhere to the Foreigner at his coming. And they bragged that they doubted not but to abuse, and lay asleep, the Queen and Council of *England*, as to their having any fear of the Papists here; for they knew, they said, the State would cast but an Eye, and look about to see, whether there were any eminent Head of that Party, under whom it might unite itself; and finding none worth the thinking on, rest secure, and take no Apprehension; whereas they meant, they said, to deal with the People, and Particulars, by Reconcilements, and Confessions, and secret Promises, and regarded not Heads of Party. *Their Practices within.*

24. And this was the true Reason, why after that the Seminaries began to blossom, and to make Missions into *England*, which was about the three and twentieth Year of Queen *Elizabeth*, (at which time also was the first Suspicion of the *Spanish* Invasion,) then, and not before, grew the sharp and severe Laws against the Papists. And therefore the Papists may do well to change their Thanks; and as they thank *Spain* for their Favours, thank them for their Dangers and Miseries, if they should fall upon them: for nothing ever made their Case so bad as the Hope of the Greatness of *Spain*; which adding Reason of State to Matter of Conscience and Religion, whet the Laws against them. And this Case also seems to return again, at this time; except the Clemency of his Majesty, and the State, super-abound; as, for my part, I wish it should: and that the Proceedings towards them may rather tend to Security, and Provision, and Point of State, than to Persecution for Religion. But to conclude; these things, briefly touched, may serve as in a Subject conjectural and future, to represent how just a Cause of Fear this Kingdom may have of *Spain*: omitting, as was said before, all present and more secret Occurrences.

25. The

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The third Ground of the War.

III. 25. The *third Ground of a War with* Spain, I have set down to be, a just Fear of the Subversion of our Church and Religion. This Point needs not to be long dwelt upon: For if the War be defensive, as I have prov'd it to be, no Man will doubt, that a defensive War against a Foreigner for Religion is lawful. Of an offensive War, there is more Dispute. But no Man will doubt, if the Pope, or King of *Spain*, should demand us to forsake our Religion upon Pain of a War, whether it were as unjust a Demand, as the *Persians* made to the *Grecians* of Land and Water; or the *Ammonites* to the *Israelites* of their right Eyes. And we see all the Heathens styled their defensive Wars, *pro aris & focis*; placing their Altars before their Hearths. So that 'tis in vain to speak farther of this. Only we must say, that the Fear of the Subversion of our Religion from *Spain*, is the more just, because all other Catholick Princes and States content themselves to maintain their Religion within their own Dominions, and meddle not with the Subjects of other States; whereas the Practice of *Spain* has been, both in *Charles* the Fifth's time, and in the time of the League in *France*, by War, and now with us by Conditions of Treaty, to intermeddle with foreign States; and to declare themselves Protectors General of the Catholicks, all over the World. As if the Crown of *Spain* intended to plant the Pope's Law by Arms; as the *Ottomans* do the Law of *Mahomet*. And thus much concerning the first main Point, of justifying the Quarrel.

SECT. II.

Of the FORCE *requisite to a* WAR.

The Forces ballanced betwixt Spain *and* Britain.

1. THE second main Part of what I propose, is *to balance the Forces between* Spain *and us*. And this also tends to no more than what the King may do. For what he may do, is of two kinds: what he may do as *just*; and what he may do as *possible*. Of the one I have already spoke; and of the other I am now to speak.

Spain *not an Over-match for* England.

2. I said *Spain* was no such Giant: and yet if he were a Giant, it will be but as between *David* and *Goliath*; for *God is on our side*. But to leave all Arguments that are supernatural, and to speak in a human and politick Sense, I am led to think that *Spain* is no Over-match for *England*, by that which leads all Men; *viz.* Experience and Reason. And with Experience I will begin; for there begins all Reason.

Shewn by Experience.

3. Is it Fortune, shall we think, that in all Actions of War or Arms, great and small, which have happened these many Years, ever since *Spain* and *England* have had Debates, that the *English* upon all Encounters have perpetually come off with Honour, and the better? 'Tis not Fortune sure; she is not so constant. There is somewhat in the Nation, and natural Courage of the People, or some such thing. I will make a brief List of the Particulars

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lars themſelves, in the ſtrict Way of hiſtorical Truth. This were a fit Speech, you will ſay, for a General at the Head of an Army, going to join Battel: yes; and it is no leſs fit to be ſpoke at the Head of a Council, upon a Deliberation of Entring into a War. Neither do I ſpeak this to diſparage the *Spaniſh* Nation, which I take to be of the beſt Soldiers in *Europe*: But that redounds to our Honour, if we ſtill have had the better of them.

4. In the Year 1578, was that famous *Lammas-day* which buried the Reputation of *Don John* of *Auſtria*; himſelf not ſurviving long after. *Don John*, being ſuperior in Forces, aſſiſted by the Prince of *Parma*, *Mondragon*, *Manſell*, and other the beſt Commanders of *Spain*, confident of Victory, charged the Army of the States near *Rimenant*, bravely and furiouſly at the firſt; but after a Fight maintain'd for the Space of a whole Day, he was repulſed, and forced to retreat, with great Slaughter of his Men; whereby the Courſe of his farther Enterprizes was wholly ſtopped: and this chiefly by the Courage and Virtue of the *Engliſh* and *Scotiſh* Troops, under the Conduct of Sir *John Norris*, and Sir *Robert Stuart*. Which Troops came to the Army but the Day before; harraſſed with a long and wearisome March: when the Soldiers, more ſenſible of a little Heat of the Sun, than of any cold Fear of Death, threw aſide their Armour and fought in their Shirts. And as it was generally conceived, had it not been that the Count of *Boſſu* was ſlack in charging the *Spaniards* upon their Retreat, this Fight had ended in an abſolute Defeat. But it was enough to chaſtize *Don John* for his inſidious Treaty of Peace, wherewith he had abuſed the States at his firſt coming. And the Fortune of the Day may be the better aſcribed to the Service of the *Engliſh* and *Scotch*, by comparing this Charge near *Rimenant*, where the *Engliſh* and *Scotch* were in great Numbers, with the like Charge given by *Don John*, half a Year before at *Gemblours*, where the Succeſs was contrary: there being at that time in the Army but a Handful of *Engliſh* and *Scotch*; and they put into Confuſion by their own Horſe.

The Battel of Rimenant, in 1578.

5. The firſt Dart of War, which was thrown from *Spain* or *Rome*, upon the Kingdom of *Ireland*, was in the Year 1580; for the Deſign of *Stukely* blew over into *Africk*; and the Attempt of *Sanders* and *Fitz-Maurice* had a Spice of Madneſs. In that Year *Ireland* was invaded by *Spaniſh* and *Italian* Forces, under the Pope's Banner, and the Conduct of *San Joſepho*, to the Number of 700, or more, who landed at *Smerwick* in *Kerry*. A poor Number it was to conquer *Ireland* to the Pope's Uſe; for their Deſign was no leſs: but withal they brought Arms for 5000 Men above their own Number, intending to arm ſo many of the Rebels of *Ireland*. And their Purpoſe was, to fortify themſelves in ſome ſtrong Place of the wild and deſolate Country, and there to neſtle till greater Succours came; they being haſten'd to this Enterprize upon a ſpecial Reaſon of State, not proper to the Enterprize itſelf; which was by the Invaſion of *Ireland*, and the Noiſe thereof, to trouble the Council of *England*; and to make a Diverſion of certain Aids, that were then preparing from hence for the *Low Countries*. They choſe a Place where they erected a Fort, which they called *Fort del Or*; and

Ireland invaded by the Pope, in 1580.

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from thence they bolted like Beaſts of the Foreſt, ſometimes into the Woods and Faſtneſſes; and ſometimes back again to their Den. Soon after, Siege was laid to the Fort, by the Lord *Gray*, then Deputy, with a ſmaller Number than thoſe within the Fort; adventurouſly indeed: but haſte was made to attack them before the Rebels came in to them. After a Siege of four Days only, and two or three Sallies, with loſs on their part, they who ſhould have made good the Fort for ſome Months, till now Succours came from *Spain*, or at leaſt from the Rebels of *Ireland*, yielded themſelves without Conditions. And as there were not in the *Engliſh* Army enough to keep every Man a Priſoner; and as alſo the Deputy expected inſtantly to be attacked by the Rebels; and again, as there were no Barks to put them into, and ſend them away by Sea; they were all put to the Sword: with which Queen *Elizabeth* was afterwards much diſpleaſed.

The Retreat of Gaunt, *in* 1582.

6. In the Year 1582, was that memorable Retreat of *Gaunt*; than which there has not been an Exploit of War more celebrated. For in the true Judgment of military Men, honourable Retreats are no way inferior to brave Charges; as having leſs of Fortune; more of Diſcipline; and as much of Valour. There were to the Number of three hundred Horſe, and as many thouſand Foot, *Engliſh*, commanded by Sir *John Norris*, charged by the Prince of *Parma*, coming upon them with ſeven thouſand Horſe; beſides that the whole Army of the *Spaniards* was ready to march. Nevertheleſs, Sir *John Norris* maintained a Retreat without Diſarray, for the ſpace of ſome Miles, to the City of *Gaunt*, with leſs Loſs of Men than the Enemy: the Duke of *Anjou*, and the Prince of *Orange*, beholding this noble Action from the Walls of *Gaunt*, as in a Theatre, with great Admiration.

The Taking of Carthagena, *in* 1585.

7. In the Year 1585, followed the proſperous Expedition of *Drake* and *Carlile* into the *Weſt-Indies*; in which I ſet aſide the taking of *S. Jago* and *S. Domingo* in *Hiſpaniola*, as Surprizes rather than Encounters. But that of *Carthagena*, where the *Spaniards* had warning of our coming, and had put themſelves in their full Strength, was one of the hotteſt Services, and moſt dangerous Aſſaults, that has been known. For the Acceſs of the Town was only by a Neck of Land, between the Sea on the one part, and the Harbour-Water, or inner Sea, on the other; fortified clear over with a ſtrong Rampart and Barricado; ſo that upon the Aſcent of our Men, they had both great Ordnance and ſmall Shot, that thundered and ſhower'd upon them from the Rampart in the Front, and from the Gallies that lay at Sea in Flank. And yet they forced the Paſſage, and won the Town; tho likewiſe very well mann'd.

Sir Francis Drake's *Expedition againſt the* Spaniards, *in* 1587.

8. As to the Expedition of Sir *Francis Drake* in the Year 1587, for deſtroying of the *Spaniſh* Shipping and Proviſion upon their own Coaſt; as I cannot ſay that there intervened in that Enterprize any ſharp Fight, or Encounter; ſo nevertheleſs it ſtrangely diſcovered, either that *Spain* is very weak at home, or very ſlow to move; when they ſuffered a ſmall Fleet of *Engliſh* to make an hoſtile Invaſion, or Incurſion, upon their Havens and Roads, from *Cadiz* to *Capa Sacra*, and thence to *Caſcais*; and to fire,

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fire, ſink, and carry away at the leaſt, ten thouſand Ton of their great Shipping, beſides fifty or ſixty of their ſmaller Veſſels; and that in the Sight, and under the Command of their Forts, and almoſt under the Eye of their great Admiral, the beſt Commander of *Spain* by Sea, the Marquis *de Santa Cruz*; without ever diſputing it by any Fight of importance. I remember *Drake*, in the vaunting Stile of a Soldier, would call this Enterprize, the Singeing of the King of *Spain*'s Beard.

9. The Enterprize of eighty-eight deſerves to be dwelt upon a little more fully, as being a Miracle of Time. There was armed from *Spain* in the Year 1588, the greateſt Navy that ever floated upon the Sea: for tho there have been far greater Fleets in number; yet for the Bulk and Building of the Ships, with the Furniture of great Ordnance and Proviſions, there never was the like. The Deſign was not to make an Invaſion only, but an utter Conqueſt of this Kingdom. The Number of Veſſels was one hundred and thirty; whereof Galliaſſes and Galleons ſeventy-two; the reſt ſtately Ships, like Floating-Caſtles, mann'd with thirty thouſand Soldiers and Mariners. This Navy was the Preparation of five whole Years at the leaſt. It repoſed itſelf alſo upon divine Aſſiſtance; for it received ſpecial Bleſſing from Pope *Sixtus*; and was deſign'd as an Apoſtolical Miſſion for reducing this Kingdom to the Obedience of the See of *Rome*. And in farther token of this holy Warfare, there were among the reſt of theſe Ships, twelve, called by the Names of the twelve Apoſtles. But it was truly conceived, that this Kindom of *England* could never be overwhelm'd, except the Land-waters came into the Sea-tides. Whence there was alſo in Readineſs in *Flanders*, a mighty ſtrong Army of Land Forces, to the Number of fifty thouſand veteran Soldiers, under the Conduct of the Duke of *Parma*, the beſt Commander, next the *French* King *Henry* IV. of his time. Theſe were deſign'd to join with the Forces at Sea; there being prepared a Number of flat-bottom'd Boats to tranſport the Land-Forces, under the Wing and Convoy of the great Navy: For they queſtion'd not, but the Navy ſhould be abſolute Maſter of the Seas. Againſt theſe Forces were prepared on our part, to the Number of near one hundred Ships; not ſo great of Bulk indeed, but of a more nimble Motion, and more ſerviceable; beſides a leſs Fleet of thirty Ships, for the Cuſtody of the narrow Seas. There were alſo in Readineſs at Land, two Armies; beſides other Forces, to the Number of ten thouſand, diſperſed among the Coaſt-Towns in the Southern Parts. The two Armies were appointed; one of them conſiſting of twenty-five thouſand Horſe and Foot, for repulſing the Enemy at their landing; and the other, of twenty-five thouſand, for Safeguard and Attendance about the Court and Queen's Perſon. There were alſo other dormant Muſters of Soldiers throughout all the Parts of the Kingdom, that were put in Readineſs, but not drawn together. The two Armies were aſſign'd to the leading of two Generals, noble Perſons, but both of them rather Courtiers, and aſſured to the State, than martial Men; yet lined and aſſiſted with ſubordinate Commanders of great Experience and Valour.

The Spaniſh Armada *in* 1588.

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Sail from the Groyne.

10. The *Spaniſh* Navy ſet ſail from the *Groyne* in *May*, and was diſperſed and driven back by Weather. Our Fleet ſet out ſomewhat later from *Plymouth*, and bore up towards the Coaſt of *Spain*, to have engaged the *Spaniſh* Navy; but partly by reaſon of contrary Winds, partly upon Advertiſement that the *Spaniards* were gone back, and upon ſome Suſpicion alſo that they might paſs by, towards the Coaſt of *England*, whilſt we were ſeeking them afar off; it returned to *Plymouth* about the middle of *July*. At that time came more confident Advice, tho falſe, not only to the Lord Admiral, but to the Court, that the *Spaniards* could not poſſibly come forward that Year: whereupon our Fleet was upon the Point of diſbanding, and many of our Men gone aſhore: at which very time the invincible *Armada*, for ſo it was called, in a *Spaniſh* Oſtentation throughout *Europe*, was diſcovered upon the Weſtern Coaſt. It was a kind of Surprize; becauſe our Ships were ready to ſeparate. Nevertheleſs the Admiral, with ſuch Ships only as could be got ready, made out towards them; but ſo that of a hundred Ships, there came ſcarce thirty to work. However, with theſe, and ſuch as came daily in, we ſet upon them, and gave them the Chaſe. But the *Spaniards* for want of Courage, which they called want of Commiſſion, declined the Fight; caſting themſelves continually into Rounds, their ſtrongeſt Ships walling in the reſt; and in that manner they made a flying Retreat towards *Calais*. For five or ſix Days we purſued them cloſe, fought with them continually, made great Slaughter of their Men, took two of their great Ships, and gave diverſe others of their Ships their Death's Wounds, whereof they ſoon after ſunk and periſhed; and, in a word, diſtreſſed them almoſt in the Nature of a Defeat: ourſelves in the mean time receiving little or no Hurt.

Anchor at Calais.

11. Near *Calais* the *Spaniards* anchored; expecting their Land Forces, which came not. It was afterwards alledged, that the Duke of *Parma* artificially delay'd his coming: but this was a Pretence, given out by the *Spaniards*; partly upon a *Spaniſh* Envy againſt that Duke, being an *Italian*, and his Son a Competitor to *Portugal*; but chiefly to ſave the monſtrous Scorn and Diſreputation, which they and their Nation received by the Succeſs of this Enterprize. Therefore their Colours and Excuſes were, that their General by Sea had a limited Commiſſion, not to fight till the Land Forces were come in: and that the Duke of *Parma* had particular Reaches and Ends of his own, under hand, to croſs the Deſign. But it was both a ſtrange Commiſſion, and a ſtrange Obedience to a Commiſſion, for Men in the midſt of their own Blood, and being ſo furiouſly attacked, to hold their Hands, contrary to the Laws of Nature, and Neceſſity. And as for the Duke of *Parma*, he was reaſonably well tempted to be true to that Enterprize, by no leſs Promiſe than to be made a feudatory, or beneficiary King of *England*; under the Seignory, in chief, of the Pope, and the Protection of the King of *Spain*. Beſides, it appeared that the Duke of *Parma* held his Place long after in the Favour and Truſt of the King of *Spain*, by the great Employments and Services that he performed in *France*. And again, 'tis manifeſt that the *Duke* did his beſt to

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to come down, and to put to Sea. The Truth was, that the *Spaniſh* Navy, upon thoſe Proofs of Fight which they had with the *Engliſh*, finding how much Damage they had received, and how little Hurt they did, by reaſon of the Activity and low Building of our Ships, and the Skill of our Sea-men; and being alſo commanded by a General of ſmall Courage and Experience; and having loſt at the firſt, two of their braveſt Commanders at Sea, *Petro de Valdez*, and *Michael de Oquenda*; durſt not venture a Sea-fight, but reſted wholly upon the Land Enterprize.

12. On the other ſide, the tranſporting of the Land Forces failed in the very Foundation: for whereas the Council of *Spain* made full Account, that their Navy ſhould be Maſter of the Sea; and therefore able to guard and protect the Veſſels of Tranſportation; when it fell out, to the contrary, that the great Navy was diſtreſſed, and had enough to do to ſave itſelf; and again, that the *Hollanders* impriſoned their Land Forces with a brave Fleet of thirty Sail, excellently well appointed: Things, I ſay, being in this State; it came to paſs, that the Duke of *Parma* muſt have flown, if he would have come into *England*; for he could get neither Bark nor Mariner to put to Sea. Yet it is certain, that the Duke looked ſtill for the Return of the *Armada*; even at that time when they were wandering upon the Northern Seas. *Fail of their Land-Forces.*

13. But the *Armada*, which we left anchor'd at *Calais*, was from thence, as Sir *Walter Rawleigh* uſed prettily to ſay, ſuddenly driven away with Squibs; for it was no more than a Stratagem of Fire-boats; manleſs, and ſent upon them by the favour of the Wind in the Night-time, that put them into ſuch Terror, that they cut their Cables, and left their Anchors behind. After they had hovered ſome two or three Days about *Graveling*, they were there again beaten in a great Fight; when our ſecond Fleet, which kept the narrow Seas, was come in and join'd to our main Fleet. Then the *Spaniards* falling into farther Terror, and finding alſo diverſe of their Ships every Day to ſink, loſt all Courage; and inſtead of coming up into the *Thames* for *London*, as their Deſign was, fled on towards the North, to ſeek their Fortunes; being ſtill chaſed by the *Engliſh* Navy at their Heels, till we were obliged to give them over for want of Powder. *Chaſed from Graveling.*

14. The Breath of *Scotland* the *Spaniards* could not endure; neither durſt they as Invaders land in *Ireland*; but only ennobled ſome of the Coaſts thereof with Shipwrecks. And ſo making Northward aloof, as long as they had any Suſpicion of being purſued; at laſt, when they were out of reach, they turned, and croſſed the Ocean to *Spain*; having loſt fourſcore of their Ships, and the greater part of their Men. And this was the End of that Sea-Giant, the invincible *Armada*: which having not ſo much as fired a Cottage of ours at Land, nor taken a Cock-boat of ours at Sea, wandered thro the Wilderneſs of the Northern Seas; and according to the Curſe in Scripture, *came out againſt us one way, and fled from us ſeven ways*: Serving only to make good the Judgment of an Aſtrologer, long before given, *Octuageſimus octavus mirabilis annus*: or rather, to make good, even to the Aſtoniſhment of all Poſterity, the wonderful *Their Defeat.*

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derful Judgments of God, commonly poured down upon vaſt and proud Aſpirings.

Spain *invaded by the* Engliſh *in* 1589.

15. In the Year enſuing, *viz.* 1589, we gave the *Spaniards* no Breath, but turned Challengers; and invaded the Main of *Spain*. In which Enterprize, altho we failed of our End, which was to ſettle *Don Antonio* in the Kingdom of *Portugal*; yet a Man ſhall hardly meet with an Action that better reveals the great Secret of the Power of *Spain*: which well ſought into, will be found rather to conſiſt in a veteran Army ever on Foot, in one part or other of *Chriſtendom*, than in the Strength of their Dominions and Provinces. For what can be more ſtrange, or more to the Diſcredit of the Power of the *Spaniard* upon the Continent, than that with an Army of eleven thouſand *Engliſh* Land Soldiers, and a Fleet of twenty-ſix Ships of War, beſides ſome weak Veſſels for Tranſportation, we ſhould within the compaſs of two Months, have won one Town of Importance by *Scalado*; battered and aſſaulted another; overthrown great Forces in the Field, and this under the Diſadvantage of a Bridge ſtrongly barricadoed; landed our Army in three ſeveral Parts of the Kingdom; marched ſeven Days in the Heart of the Country; lodged three Nights in the Suburbs of the principal City; beat their Forces into the Gates thereof; poſſeſſed two Frontier Forts; and came off, after all, with ſmall Loſs of Men, otherwiſe than by Sickneſs? And it was verily thought, that had it not been for four great Diſfavours of the Voyage; *viz.* the failing in ſundry Proviſions that were promiſed, eſpecially Cannon for Battery; the vain Hopes of *Don Antonio*, concerning the People of the Country coming in to his Aid; the Diſappointment of the Fleet, that was directed to come up the River of *Lisbon*; and the Diſeaſes which ſpread in the Army, by reaſon of the Heat of the Seaſon, and of the Soldiers Irregularity in Diet; the Enterprize had ſucceeded, and *Lisbon* been carried. But however, it gives Proof to the World, that an Invaſion of a few *Engliſh* upon *Spain*, may have a juſt Hope of Victory, at leaſt of Paſſport to depart ſafely.

The Fight of Sir Richard Greenvil, *Commander of the* Revenge, *in* 1591.

16. In the Year 1591, was that memorable Fight of an *Engliſh* Ship, called the *Revenge*, under the Command of Sir *Richard Greenvil*; memorable even beyond Credit, or to the height of ſome heroical Fable: and tho it were a Defeat, yet it exceeded a Victory; being like the Act of *Sampſon*, that killed more Men at his Death, than in all the time of his Life. This Ship, for the ſpace of fifteen Hours, ſtood like a Stag among Hounds at Bay; and was ſieged and fought with, in turn, by fifteen great Ships of *Spain*, part of a Navy of fifty-five Ships in all; the reſt, like Abettors, looking on afar off. And among the fifteen Ships that fought, the great *S. Philippo* was one; a Ship of fifteen hundred Ton, Prince of the twelve *Sea Apoſtles*, but glad to be ſhifted off from the *Revenge*. This brave Ship, the *Revenge*, being mann'd only with two hundred Soldiers and Mariners, whereof eighty lay ſick, yet after a Fight maintained ſo many Hours, and two Ships of the Enemy ſunk by her ſide, beſides many others torn and battered, and great Slaughter of Men, never came to be enter'd, but was taken by Compoſition; the Enemies themſelves having in Admiration

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miration the Virtue of the Commander, and the whole Tragedy of that Ship.

17. In the Year 1596, was the ſecond Invaſion that we made upon the main Territories of *Spain*; proſperouſly atchieved by that worthy and famous *Robert* Earl of *Eſſex*, in conſort with the noble Earl of *Nottingham*, then Admiral. This Expedition was like Lightning; for in the ſpace of fourteen Hours the King of *Spain*'s Navy was deſtroy'd, and the Town of *Cadiz* taken. The Navy was no leſs than fifty tall Ships; beſides twenty Gallies to attend them. The Ships were preſently beaten, and put to flight, with ſuch Terror that the *Spaniards* in the end were their own Executioners; and fired them all with their own Hands. The Gallies, by the benefit of the Shores and Shallows, got away. The Town was a fair, ſtrong, rich and well built City; famous in Antiquity, and now moſt ſpoken of for this Diſaſter. It was mann'd with four thouſand Foot, and ſome four hundred Horſe. It was ſacked and burned; tho great Clemency was uſed towards the Inhabitants. But what is no leſs ſtrange than the ſudden Victory, was the great Patience of the *Spaniards*; who tho we ſtay'd upon the Place diverſe Days, yet never offered us any Play then; nor ever put us in Suit by any Action of Revenge, or Reparation at any time after. *Cadiz taken by the Engliſh in 1596.*

18. In the Year 1600, was the Battel of *Newport*, in the *Low-Countries*, where the Armies of the Arch-Duke and the States, tried it out by a juſt Conteſt. This was the only Battel fought in thoſe Countries for many Years before. Battels in the *French* Wars have been frequent, but in the Wars of *Flanders* rare; as the Nature of a Defenſive War requires. The Forces of both Armies were not much unequal: that of the States ſomewhat exceeded in number; but this again was compenſated by the quality of the Soldiers: for thoſe of the *Spaniard* were of the Flower of all their Forces. The *Arch-Duke* was the Aſſailant and Preventer; and reaped the Fruit of his Diligence and Celerity. For charging certain Companies of *Scotiſh* Men, to the Number of eight hundred, ſent to make good a Paſs, and thereby ſevered from the Body of the Army; he cut them all in Pieces: for they, like a brave Infantry, when they could make no honourable Retreat, and would take no diſhonourable Flight, made good the Place with their Lives. This Entrance of the Battel whet the Courage of the *Spaniards*, tho it blunted their Swords; ſo that they came proudly on, confident to defeat the whole Army. The Encounter of the main Battel which followed, was a juſt Encounter; not haſtening to a ſudden Rout; nor the Fortune of the Day reſting upon a few former Ranks; but fought out to the Proof by ſeveral Squadrons; and not without Variety of Succeſs; *hæret pede pes, denſuſque viro vir*. There fell out an Error in the *Dutch* Army, by the over haſty Medley of ſome of their Men with the Enemy's; which hinder'd the playing of their great Ordnance: but the End was, that the *Spaniards* were utterly defeated; and near five thouſand of their Men in the Fight, and in the Execution, ſlain and taken; among whom were many of the principal Perſons of their Army. The Honour *The Battel of Newport, in 1600.*

of

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of the Day was, both by the Enemy and the *Dutch* themſelves, aſcribed to the *Engliſh*; of whom Sir *Francis Vere*, in a private Commentary which he wrote of that Service, teſtifies, that of fifteen hundred in Number; for they were no more; eight hundred were ſlain in the Field: and what is almoſt incredible, in a Day of Victory, of the remaining ſeven hundred, two Men only came off unhurt. Sir *Francis Vere* himſelf had the principal Honour of the Service; to whom the Prince of *Orange* tranſmitted the Direction of the Army for that Day; and in the next Place Sir *Horace Vere*, his Brother, who was the Principal in the active Part. The Service alſo of Sir *Edward Cecil*, Sir *John Ogle*, and diverſe other brave Gentlemen, was eminent.

The Battel of Kingſale, *in* 1601.

19. In the Year 1601, followed the Battel of *Kingſale* in *Ireland*. By this *Spaniſh* Invaſion of *Ireland*, which was in *September* that Year, one may gueſs how long a *Spaniard* will live on *Iriſh* Ground; which is four Months at the moſt. For they had all the Advantages in the World; and no Man would have thought, conſidering the ſmall Forces employed againſt them, that they could have been driven out ſoon. They obtain'd, without Reſiſtance, in the End of *September*, the Town of *Kingſale*; a ſmall Garriſon, of one hundred and fifty *Engliſh*, leaving the Town upon the *Spaniards* Approach; and the Townſmen receiving the Foreigners as Friends. The Number of *Spaniards* that put themſelves into *Kingſale*, was two thouſand veteran Soldiers; under the Command of *Don John d' Aquila*, a Man of good Valour. The Town was ſtrong of itſelf; neither wanted there any Induſtry to fortify it on all Parts, and make it tenable, according to the Skill and Diſcipline of the *Spaniſh* Fortification. At that time the Rebels were proud, being encouraged upon former Succeſſes; for the then Deputy, the Lord *Mountjoy*, and Sir *George Carew*, Preſident of *Munſter*, had performed diverſe good Services to their Prejudice; yet the Defeat they had given the *Engliſh* at *Black-water*, not long before, and the Treaty with the Earl of *Eſſex*, was yet freſh in their Memory.

20. The Deputy loſt no time, but made haſte to have recovered the Town before new Succours came, and ſat down before it in *October*; and laid ſiege to it three Winter Months or more: during which time, Sallies were made by the *Spaniards*; but they were beat back with Loſs. In *January* came freſh Succours from *Spain*; to the number of two thouſand more, under the Conduct of *Alonzo d' Ocampo*. Upon the Comforts of theſe Succours, *Tirone* and *Odonnell* drew up their Forces together, to the number of ſeven thouſand, beſides the *Spaniſh* Regiments, and took the Field; reſolved to relieve the Town, and to give the *Engliſh* Battel. Here then was the Caſe: an Army of *Engliſh*, of ſome ſix thouſand, waſted and tired with a long Winter's Siege, engaged in the midſt, between an Army of a greater Number than themſelves, freſh and in Vigour, on the one ſide; and a Town ſtrong in Fortification, and ſtrong in Men, on the other. But what was the Event? This, that after the *Iriſh* and *Spaniſh* Forces had come on, and ſhewed themſelves in ſome Bravery; they were content to give the *Engliſh* the Honour of charging them firſt: and when it

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it came to the Charge, there appeared no difference between the Valour of the *Iriſh* Rebels, and the *Spaniards*; but that the one ran away before they were charged, and the other ſoon after.

21. Again, the *Spaniards* that were in the Town had ſo well remember'd their Loſſes, in their former Sallies, that the Confidence of an Army, which came for their Deliverance, could not draw them out again. There ſucceeded an abſolute Victory for the *Engliſh*, with the Slaughter of above two thouſand of the Enemy; the taking of nine Enſigns, whereof ſix were *Spaniſh*; and the taking of the *Spaniſh* General, *d'Ocampo*, Priſoner: and this with the Loſs of ſo few of the *Engliſh* as is ſcarce credible; being, as has been rather confidently than credibly reported, but of one Man, the Cornet of Sir *Richard Greame*; tho not a few hurt. There followed immediately after the Defeat, a Surrender of the Town by Capitulation; and not only ſo, but an avoiding, by expreſs Articles of Treaty, of all other *Spaniſh* Forces throughout *Ireland*, from the Places and Neſts where they had ſettled themſelves in greater Strength than at *Kingſale*; which were *Caſtlehaven*, *Baltimore*, and *Beerehaven*. Indeed they went away with ſound of Trumpet; for they did nothing but publiſh and trumpet all the Reproaches they could deviſe, againſt the *Iriſh* Land and Nation; inſomuch as *D'Aquila* ſaid in open Treaty, that when the Devil upon the Mount ſhewed *Chriſt* all the Kingdoms of the Earth, and the Glory of them, he did not doubt but the Devil left out *Ireland*, and kept it for himſelf.

22. 'Tis true, that among the late Adventures, the Voyage of Sir *Francis Drake*, and Sir *John Hawkins*, to the *Weſt-Indies*, was unfortunate; yet ſo as not to break, or croſs the Aſſertion of our having had the better of the *Spaniards* in all Fights of late. For the Diſaſter of that Voyage was cauſed chiefly by Sickneſs; as may well appear by the Death of both the Generals, Sir *Francis Drake*, and Sir *John Hawkins*, of the ſame Sickneſs among the reſt. The Land Enterprize of *Panama*, was an ill-meaſured and immature Counſel; as grounded upon a falſe Account, that the Paſſages towards *Panama* were no better fortified than *Drake* had left them. And yet it redounded not to any Fight of Importance, but to a Retreat, after the *Engliſh* had proved the Strength of their firſt Fort; and had notice of the two other Forts beyond, by which they were to have marched. 'Tis true, that in the Return of the *Engliſh* Fleet, they were ſet upon by *Avellaneda*, Admiral of twenty great *Spaniſh* Ships; our Fleet being but fourteen, full of ſick Men, deprived of their two Generals by Sea, and having no Pretence, but to ſail homewards: and yet the *Spaniards* did but ſalute them, about the Cape *de los Corientes*, with ſome ſmall offer of Fight, and came off with Loſs; altho it was ſuch a new thing for the *Spaniards* to receive ſo little Hurt, upon dealing with the *Engliſh*, that *Avellaneda* made great Brags of it, for no other matter than the waiting upon the *Engliſh* afar off, from Cape *de los Corientes* to Cape *Antonio*; which nevertheleſs in the Language of a Soldier, and of a *Spaniard*, he called a Chace.

The Enterprize of Panama.

23. But before I proceed farther, 'tis good to anſwer an Objection, which, if not removed, the Concluſion of Experience from Time paſt, to

The State of Spain compared in 1588 and 1624.

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to the Time preſent, will not be found and perfect. For it will be ſaid, that in the former Times, whereof we have ſpoke, *Spain* was not ſo mighty as it is now; and *England*, on the other ſide, more powerful. Therefore let us compare, with Indifference, theſe Diſparities of Times, and we ſhall plainly perceive that they make for the Advantage of *England* at preſent. And, the leſs to wander in Generalities, we will fix the Compariſon to preciſe Times; comparing the State of *Spain* and *England*, in the Year eighty-eight, with this preſent Year 1624.

24. *Firſt*, therefore, it is certain, that *Spain* has not now a Foot of Ground, in quiet Poſſeſſion, more than it had in eighty-eight. As for the *Valtoline*, and the *Palatinate*, it is a certain Maxim in State, that all Countries of new Conqueſt, till ſettled, are rather Matters of Burden than of Strength. On the other ſide, *England* has *Scotland* united, and *Ireland* reduced to Obedience, and planted; which are great Augmentations.

25. *Secondly*, in eighty-eight, the Kingdom of *France*, able to counterbalance *Spain* itſelf, much more in Conjunction, was torn with the Party of the League; which gave Law to their King, and depended wholly upon *Spain*. Now *France* is united under a valiant young King, generally obeyed, if he will himſelf, and King of *Navarre*, as well as of *France*; and no ways taken Priſoner, tho he be tied in a double Chain of Alliance with *Spain*.

26. *Thirdly*, in eighty-eight, there ſat in the See of *Rome* a fierce thundering Friar, that would ſet all at odds: and tho he would after have turned his Teeth upon *Spain*; yet he was taken Order with before it came to that. Now there is aſcended to the Papacy, a Perſonage, that came in by a chaſte Election, no way obliged to the *Spaniards:* a Man bred in Embaſſages and Affairs of State; that has much of the Prince, and nothing of the Friar: and one, that tho he love the Chair of the Papacy well, yet loves the Carpet above the Chair; that is, *Italy* and the Liberties thereof.

27. *Fourthly*, in eighty-eight, the King of *Denmark* was a Stranger to *England*, and rather inclined to *Spain*; now that King is incorporated to the Blood of *England*, and engaged in the Quarrel of the *Palatinate*. Then alſo *Venice*, *Savoy*, and the Princes and Cities of *Germany*, had but a dull Fear of the Greatneſs of *Spain*, upon a general Apprehenſion only of the ſpreading and ambitious Deſigns of that Nation: now their Fear is ſharpened and pointed, by the *Spaniards* late Enterprizes upon the *Valtoline* and the *Palatinate*, which came nearer to them.

28. *Laſtly*, the *Dutch*, the *Spaniard*'s perpetual Dueliſt, has at preſent, five Ships to one, and the like Proportion in Treaſure and Wealth, to that they had in eighty-eight. Neither is it poſſible that the Coffers of *Spain* ſhould now be fuller than they were in eighty-eight; for at that time *Spain* had no other Wars, but thoſe of the *Low-Countries*, which were grown into an Ordinary; but now they have had coupled therewith the Extraordinary of the *Valtoline*, and the *Palatinate*. And thus I conclude my Anſwer to the Objection as to the Difference of Times; not entring into more ſecret Paſſages of State,

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State, but keeping that Character of Stile whereof *Seneca* ſays, *It denotes more than it expreſſes*[x].

29. Here I would end with Matter of Experience, did I not hold it neceſſary to diſcover a wonderful erroneous Obſervation that walks about, and is commonly received, contrary to all the true Account of Time and Experience; *viz.* that the *Spaniard*, where he once gets in, will ſeldom or never be got out again. But nothing is leſs true than this. Not long ſince, they had footing at *Breſt*, and ſome other Parts in *French Britain*, and afterwards quitted them. They had *Calais*, *Ardes*, and *Amiens*, and ſurrendered them, or were beaten out. They had ſince *Verſailles*, and fairly left it. They had, the other Day, the *Valtoline*, and now have put it in Depoſit. What they will do with *Ormus*, which the *Perſian* has taken from them, we ſhall ſee. So that to ſpeak truly; of later Times, they have rather poached and offered at a Number of Enterprizes, than maintained any conſtantly: quite contrary to that idle Tradition. In more ancient Times, (leaving their Purchaſes in *Africk*, which they after abandoned) when their great Emperor *Charles* had claſped *Germany* in his Fiſt, he was forced in the End to go from *Isburg*, and to quit every Foot in *Germany* round, that he had gained; which I doubt not will be the hereditary Iſſue of this late Purchaſe of the *Palatinate*. And ſo I conclude the Ground I have to think, that *Spain* will be no Over-match for *Great-Britain*; if his Majeſty ſhall enter into a War, from Experience, and the Records of Time. *The Spaniards eaſier to quit, than imagined.*

30. The *Grounds from Reaſon are many*. I will extract the principal, and open them briefly, and as in the Bud. For Situation, I paſs it over; tho no ſmall Point: *England*, *Scotland*, *Ireland*, and our good Confederates, the United Provinces, lie all plum together; not acceſſible but by Sea; or at leaſt by the paſſing of great Rivers, which are natural Fortifications. Whereas the Dominions of *Spain* are ſo ſcattered, as to yield great Choice of the Scenes of the War; and promiſes ſlow Succours to ſuch Parts as ſhall be attempted. *The Advantage of* Britain *over* Spain, *in point of Situation.*

31. There are three main Parts of military Puiſſance; Men, Money, and Confederates. Men are to be conſidered with regard to Valour and Number. Of Valour I ſpeak not; take it from the Witneſſes above-produced: yet the old Obſervation is true, that the *Spaniards* Valour lies in the Eye of the Looker on; but the *Engliſh* Valour lies about the Soldier's Heart. A Valour of Glory, and a Valour of natural Courage, are two things. But for Number; *Spain* is a Nation thin ſown with People; partly by reaſon of the Sterility of the Soil; and partly becauſe their Natives are exhauſted by ſo many Employments in ſuch vaſt Territories as they poſſeſs. So that it has been counted a kind of Miracle, to ſee ten or twelve thouſand native *Spaniards* in an Army. And it is certain, as we touched above, that the Secret of the Power of *Spain* conſiſts in a veteran Army, compoſed of miſcellany Forces of all Nations; which for many Years they have had on Foot upon *Courage, and native Soldiers.*

[x] *Plus ſignificat quam loquitur.*

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one Occaſion or other: and if there ſhould happen the Misfortune of a Battel, it would be a long Work to draw on Supplies. They tell of a *Spaniſh* Embaſſador, that was brought to ſee the Treaſury of St. *Mark* at *Venice*, and ſtill he looked down to the Ground; and being aſked, why he did ſo; ſaid, he was looking if their Treaſure had any Root, as his Maſter's had. But however it be of their Treaſure, certainly their Forces have ſcarce any Root; or at leaſt, it is ſuch a Root as buds poorly and ſlowly. 'Tis true, they have *Walloons*, who are tall Soldiers; yet that is but a Spot of Ground. But on the other ſide, there is not in the World again ſuch a Spring and Seminary of brave military People, as is *England*, *Scotland*, *Ireland*, and the United Provinces: So that if Wars ſhould mow them down ever ſo faſt, they may be ſuddenly ſupplied, and come up again.

The Riches of Spain *precarious.*

32. *Money*, no doubt, is the principal Part of the Greatneſs of *Spain*; for by that they maintain their veteran Army: and *Spain* is the only State of *Europe* that is a Money-Grower. But in this reſpect, of all others, comes moſt to be conſidered, the tickliſh and brittle State of the Greatneſs of *Spain*. Their Greatneſs conſiſts in their Treaſure, their Treaſure in their *Indies*, and their *Indies*, if it be well weigh'd, are but an Acceſſion to ſuch as are Maſters by Sea. So that this Axletree, whereupon their Greatneſs turns, is ſoon cut in two by any one that ſhall be ſtronger than them at Sea. Herein, therefore, I refer to the Opinions of all Men, whether the maritime Forces of *Great-Britain*, and the United Provinces, be not able to beat the *Spaniards* at Sea? For if ſo, the Links of that Chain, whereby they hold their Greatneſs, are diſſolved.

A Sea War with Spain *gainful.*

33. Now if it be ſaid, that admit the Caſe of *Spain* ſuch as we have put it; yet if we deſcend into our own Caſe, we ſhall find we are not in a Condition to enter into a War with *Spain*: I anſwer; that I know no ſuch thing; the Mint beats well; and the Pulſes of the People beat well. But there is another Point that quite deſtroys this Objection: for whereas Wars are generally Cauſes of Poverty, or Conſumption; on the contrary, the particular Nature of this War with *Spain*, if made by Sea, is likely to be a gainful and reſtorative War: So that if we go roundly on at the firſt, the War in Continuance will find itſelf. And therefore you muſt make a great Difference between *Hercules*'s Labours by Land, and *Jaſon*'s Voyage by Sea for the Golden Fleece.

Spain *deſtitute of ſure Confederates.*

34. As to *Confederates*, I will not take upon me the Knowledge how the Princes, States, and Counſels of *Europe*, at this Day, ſtand affected towards *Spain*; for that entrenches upon the ſecret Occurrents of the preſent Time, wherewith, in this Treatiſe, I have forborn to meddle. But to ſpeak of what lies open and in View; I ſee much Matter of Quarrel and Jealouſy, but little of Amity and Truſt towards *Spain*, almoſt in all other States. *France* is in Competition with them for three noble Portions of their Monarchy, *Navarre*, *Naples*, and *Milan*; and now freſhly in Difference with them about the *Valtoline*. And we ſee that once in thirty or forty Years comes a Pope, that caſts his Eye upon the Kingdom of *Naples*,

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Naples, to recover it to the Church: as it was in the Minds of *Julius* the Second, *Paul* the Fourth, and *Sixtus* the Fifth. As for that great Body of *Germany*, they have greater reason to confederate themselves with the Kings of *France*, and *Great-Britain*, or *Denmark*, for the Liberty of the *German* Nation, and for the Expulsion of the *Spanish* and foreign Forces, than they had in the Years 1552 and 1553. At which time they contracted a League with *Henry* the Second, the *French* King, upon the same Articles against *Charles* the Fifth; who had possessed himself of a great part of *Germany*, thro the Discord of the *German* Princes, which himself had sown and fomented. And this League at that time did the Deed; drove all the *Spaniards* out of that part of *Germany*; and re-instated that Nation in their ancient Liberty and Honour. For the *West-Indies*; tho *Spain* has not yet had much actual Disturbance there, except from *England*; yet I see all Princes lay a kind of Claim to them; accounting the Title of *Spain* but as a Monopoly of these large Countries, wherein they have, in great part, but an imaginary Possession. For *Africk*, upon the West; the *Moors* of *Valentia* expelled, and their Allies, yet hang as a Cloud or Storm over *Spain*. *Gabor*, on the East, is an anniversary Wind, that rises once every Year upon the Party of *Austria*. And *Persia* has entred into Hostility with *Spain*; and given them the first Blow by the taking of *Ormus*. 'Tis within every Man's Observation also, that *Venice* thinks their State almost on fire, if the *Spaniards* hold the *Valtoline*. *Savoy* has learned by fresh Experience, that Alliance with *Spain* is no Security against the Ambition of *Spain*. And *Bavaria* has likewise been taught, that Merit and Service obliges the *Spaniard* but from Day to Day.

35. Neither do I say, for all this, that *Spain* may not rectify much of this ill Blood by their particular cunning Negotiation: but yet it is in the Body, and may break out, no Man knows when, into ill Accidents: at least it shews plainly, what serves for our Purpose, that *Spain* is very destitute of assured and fast Confederates. I, therefore, conclude this Part, with the tart Saying of a present Counsellor of State in *Spain*, who, upon Occasion, said to the King his Master; "I will declare thus much for "your Comfort; your Majesty has but two Enemies, whereof the one "is all the World, and the other your own Ministers." And thus I end my second main Point, *the Balancing of the Forces between* England *and* Spain.

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one Occasion or other: and if there should happen the Misfor[illegible] Battel, it would be a long Work to draw on Supplies. Th[illegible] *Spanish* Embassador, that was brought to see the Treasury o[illegible] *Venice*, and still he looked down to the Ground; and b[illegible] he did so; said, he was looking if their Treasure had [illegible] Master's had. But however it be of their Treasure, c[illegible] have scarce any Root; or at least, it is such a Root [illegible] slowly. 'Tis true, they have *Walloons*, who are t[illegible] but a Spot of Ground. But on the other side, t[illegible] again such a Spring and Seminary of brave m[illegible] *land*, *Scotland*, *Ireland*, and the United P[illegible] should mow them down ever so fast, they m[illegible] come up again.

The Riches of Spain *precarious.*

32. *Money*, no doubt, is the principal [illegible] for by that they maintain their veteran [illegible] of *Europe* that is a Money-Grower. B[illegible] most to be considered, the ticklish [illegible] *Spain*. Their Greatness consists in [illegible] *Indies*, and their *Indies*, if it be [illegible] such as are Masters by Sea. [illegible] Greatness turns, is soon cut in [illegible] them at Sea. Herein, there [illegible] ther the maritime Forces of [illegible] not able to beat the *Spani*[illegible] whereby they hold their [illegible]

A Sea War with Spain *gainful.*

33. Now if it be sai[illegible] it; yet if we descend [illegible] dition to enter int[illegible] thing; the Mint[illegible] But there is ano[illegible] Wars are gene[illegible] the particular [illegible] to be a gai[illegible] first, the [illegible] make a [illegible] Voyag[illegible]

Spain *destitute of sure Confederates.*

34 [illegible] the [illegible] to[illegible] f[illegible]

A Discourse of [illegible]

[illegible] to recover it to the Church: as it was in the [illegible] [illegible]ul the Fourth, and *Sixtus* the Fifth. As for that great [illegible] they have greater reason to confederate themselves with the [illegible], and *Great-Britain*, or *Denmark*, for the Liberty of the [illegible] and for the Expulsion of the *Spanish* and foreign Forces, [illegible] the Years 1552 and 1553. At which time they con[illegible] *Henry* the Second, the *French* King, upon the same [illegible] the Fifth; who had possessed himself of a great [illegible] the Discord of the *German* Princes, which him[illegible] And this League at that time did the Deed; [illegible] of that part of *Germany*; and re-instated [illegible] [illegible]rty and Honour. For the *West-Indies*; [illegible] actual Disturbance there, except from [illegible] kind of Claim to them; accounting [illegible] of these large Countries, wherein [illegible] Possession. For *Africk*, upon [illegible] and their Allies, yet hang as a [illegible] is an anniversary Wind, [illegible] *Austria*. And *Persia* has [illegible] the first Blow by the [illegible] also, that *Venice* [illegible] the *Valtoline*. [illegible] Spain is no [illegible] [illegible] been [illegible]

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UPPLEMENT XIII.

THE

ENT STATESMAN:

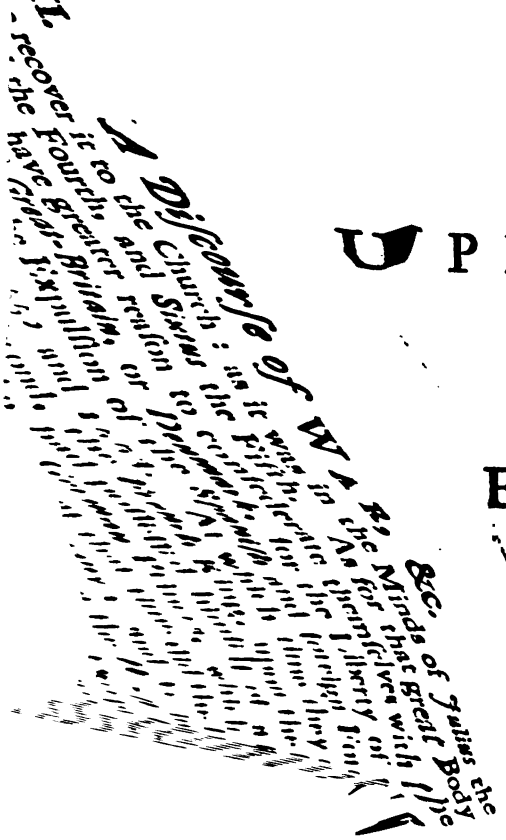
OR, THE

FICE

OF

INISTERS*.

THE



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SUPPLEMENT XIII.

THE

PRUDENT STATESMAN:

OR, THE

OFFICE

OF

PRIME MINISTERS*.

THE

* See *Vol.* I. *pag.* 241.

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THE PRUDENT STATESMAN: OR, THE Office of Prime Miniſters.

1. THE Adminiſtration of publick Affairs lies principally upon the Officers of States. *Kings* cannot poſſibly ſee all things with their own Eyes; nor hear all things with their own Ears: they muſt commit many great Truſts to their Miniſters. And hence even the wiſeſt Princes have had their Friends, and Favourites, in all Ages; and made their ſeveral Uſes of them: ſometimes for communicating their Thoughts, and thereby ripening their own Judgments; ſometimes interpoſing them betwixt themſelves, and the Envy of their People, *&c.* for Princes either cannot err; or throw their Errors upon their Miniſters: and they who ſtand neareſt muſt bear the greateſt Load. *Kings* are anſwerable to God for their Actions; but the Miniſters of Kings, whoſe Eyes, Ears, and Hands they are, muſt be anſwerable not only to God and the King, but alſo to the Subject. *The Neceſſity and Uſe of Prime Miniſters.*

2. In a Poſt of ſo much Difficulty and Danger, too great Caution and Circumſpection cannot be uſed, on the Part of the Miniſter; to ſecure, and approve himſelf in the Eyes of God and Man. And for the better Diſcharge of his Duty, and the Diſpatch of Affairs, he might do well to appoint and ſet apart certain Times for receiving Petitions, and the giving of Audience: And whenever the Matter proves weighty or difficult, let it always be delivered in Writing; and a Day fixed to be attended again. In the mean time, the Writing may be read by another; who by marking out the moſt material Part, ſhall prepare it for a ready Peruſal. And now a ſelect Friend or two, of tried Judgment and Fidelity, may be aſked their Opinions; and deſired to ſet down their Reaſons, on both ſides of the Queſtion. But if the Matter be of extraordinary Conſequence, it were not amiſs to ſend ſeveral Copies of the ſame Petition to ſeveral different Friends, all of them unacquainted with this Procedure, and requeſt their reſpective *A general Direction for their Conduct.*

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reſpective Anſwers, in Writing: whence, by comparing them together, the Miniſter ſhall be able to give a true Judgment upon the Matter, and at the ſame time diſcern the Abilities and Fidelity of his Friends. And in ſuch Caſes no Miniſter ſhould truſt his own Judgment and Capacity; for no Man is omniſcient: nor ſhould any Confidence be repoſed in Servants, or Dependants, who in ſuch Caſes always have their own Intereſt in view.

The Office of Prime Miniſters diſtributed.

3. The Office of a Prime Miniſter may be conſidered under the following Heads; *viz.* (1.) Matters of Religion, the Church and Clergy: (2.) Matters of Juſtice, the Laws, and the Profeſſors thereof: (3.) Counſellors, the Council-Table, and the great Offices and Officers of the Kingdom: (4.) Foreign Negotiations and Embaſſies: (5.) Peace and War; the Navy, Forts, and what belongs to them: (6.) Trade at home and abroad: (7.) Colonies, or foreign Plantations: (8.) The Court and Curiality.

I.

Religious Matters.

4. When any thing is offered with regard to the Church, Churchmen, or Church-Government; it is ſafeſt for a Prime Miniſter to take the Opinion of ſome grave and eminent Divines, eſpecially ſuch as are of exemplary Lives. And if any Queſtion be moved concerning the Doctrine of the Church of *England*, expreſſed in the *Thirty-nine Articles*; 'tis prudent not to give the leaſt Ear to the Movers thereof: this Doctrine being ſo orthodoxly ſettled, as not to be queſtioned without extreme Danger to the Honour and Stability of our Religion; which has been ſealed with the Blood of ſo many Martyrs and Confeſſors, as are famous thro the Chriſtian World. The Enemies and Underminers thereof are the *Roman* Catholicks, on the one hand, whoſe Tenets are inconſiſtent with the Truth of the Religion profeſſed and proteſted by the Church of *England*; and the Anabaptiſts, Separatiſts, and Sectaries, on the other hand; whoſe Tenets are full of Schiſm, and inconſiſtent with Monarchy: and they have been ſeveral times very buſy in this Kingdom, under the Colour of Zeal. Let us beware of them in *England*; a little Countenance or Connivance ſets them on fire. But for the regulating of either, there needs no other Coertion than the due Execution of the Laws eſtabliſhed by Parliament.

Biſhops.

5. The Archbiſhops and Biſhops, next under the King, have the Government of the Church and Eccleſiaſtical Affairs: and a good Miniſter will be no means of prefering any to thoſe Places, for by-Reſpects; but only for their Learning, Gravity and Worth; as their Lives and Doctrine ought to be exemplary.

Deans, Canons, &c.

6. Deans, Canons, or Prebends of Cathedrals, at their firſt Inſtitution, were of great Uſe in the Church; and were not only to be of Counſel with the Biſhop for his Revenue, but chiefly for his Government in Eccleſiaſtical Cauſes. The beſt means ſhould be uſed to prefer ſuch to theſe Places as are fit for the Purpoſe; Men eminent for their Learning, Piety and Diſcretion: and let them be reduced again to their firſt Inſtitution.

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A prime Miniſter will be often ſollicited, and perhaps importuned to prefer Scholars to Church-livings: and Friends may be advanced that Way, *cæteris paribus*; otherwiſe theſe are not Places merely of Favour: for the Charge of Souls lies upon them; the greateſt Account whereof will be required at their own Hands: but ſuch will ſhare deeply in their Faults, who are the Inſtruments of their Preferment.

Ceremonies of the Church.

7. Order and decent Ceremonies in the Church, are comely and commendable; but there muſt be great Care not to introduce Innovations: they will quickly prove ſcandalous; Men are naturally prone to Suſpicion; the Proteſtant Religion is ſeated in the golden Mean; the Enemies to her are the Extremes on either Hand.

The Perſons of Eccleſiaſticks.

8. The Perſons of Church-men are to be had in due reſpect, for their Works ſake, and protected from Scorn: but if a Clergyman be looſe and ſcandalous, he muſt not be patronized or winked at; the Example of a few ſuch will corrupt a great many.

The Church's Patrimony.

9. Prudent Care muſt be taken, that the Patrimony of the Church be not ſacrilegiouſly diverted to Lay-Uſes.

Colleges and Schools.

10. Colleges and Schools of Learning are to be cheriſhed and encouraged, for breeding up a new Supply to furniſh the Church and Commonwealth, when the old Stock are tranſplanted. This Kingdom in later Ages has been famous for good Literature; and if Preferment ſhall attend the Deſervers, there will not want Supplies.

II.

Matters of Law.

11. Next to Religion, let the principal Care be to promote Juſtice. By Juſtice and Mercy the King's Throne is eſtabliſhed.

Let the Rule of Juſtice be the Laws of the Land; an impartial Arbiter between the King and his People, and between one Subject and another. I ſhall not ſpeak ſuperlatively of them, leſt I be ſuſpected of Partiality, in regard of my own Profeſſion; but this I may truly ſay, they are ſecond to none in the Chriſtian World. They are equal between Prince and People; by which the King has the juſteſt Prerogative, and the People the beſt Liberty: and if at any time there be an unjuſt Deviation, *Hominis eſt vitium, non Profeſſionis.*

No arbitrary Power to be allowed.

12. And let no arbitrary Power be intruded. The People of this Kingdom love the Laws thereof; and nothing will oblige them more, than a Confidence of freely enjoying them. What the Nobles once ſaid in Parliament, *Nolumus Leges Angliæ mutari*, is imprinted in the Hearts of all the People.

Judges.

13. But becauſe the Life of the Laws lies in their due Execution and Adminiſtration, let an Eye be had, in the firſt Place, to the Choice of good Judges. A good Judge muſt be learned in his Profeſſion, patient in Hearing, prudent in Governing, powerful in Elocution, juſt in his Judgment: and, to ſum up all, he muſt be a Man of Courage, fearing God, and hating Covetouſneſs. An ignorant Man cannot, and a Coward dares not, be a good Judge.

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None to interpose in judicial Cases. 14. By no means let a Miniſter interpoſe, either by Word or Letter, in any Cauſe depending, or like to be depending, in any Court of Juſtice; nor ſuffer any other great Man to interpoſe; and even diſſuade the King himſelf from it: for if this ſhould prevail, it perverts Juſtice. And if the Judge be ſo juſt, and of ſuch Courage, as not to be inclined thereby; yet it always leaves a Taint of Suſpicion behind it. Judges muſt be as chaſte as *Cæſar*'s Wife; and neither be, nor be ſuſpected of Injuſtice. And indeed the Honour of the Judges in their Judicature, is the King's Honour; whoſe Perſon they repreſent.

Circuits. 15. The Judges may be of great Uſe in their Circuits; which are, twice in the Year, held throughout the Kingdom. The Trial of Cauſes between Party and Party, or delivering of the Goals in the ſeveral Counties, are very uſeful for the Expedition of Juſtice; yet the Judges are of much more Service for the Government of the Counties thro which they paſs, if this were well conſidered. For if they had Inſtructions to this Purpoſe, they might be the beſt Intelligencers to the King of the true State of his whole Kingdom, of the Diſpoſition of the People, of their Inclinations, Intentions and Motions, which are neceſſary to be truly underſtood.

Charges to be given the Judges before the Circuits. 16. To this End I could wiſh, that againſt every Circuit all the Judges ſhould, ſometimes by the King himſelf, and ſometimes by the Lord Chancellor, in the King's Name, receive a Charge of thoſe things which the preſent Times may require; and at their Return deliver a faithful Account thereof; how they found and left the Counties thro which they paſſed, and in which they kept their Aſſizes. And that they might the better perform this important Office, it will not be amiſs if ſometimes the Charge be publick; as it uſes to be in the Star-Chamber, at the end of the Terms, next before the Circuit begins; where the King's Care of Juſtice, and the Good of his People, may be publiſhed; and if ſometimes alſo it be private, to communicate to the Judges ſome things not ſo fit to be openly delivered.

The Judges to continue longer in their Circuits. 17. I could wiſh alſo, that the Judges were directed to make a little longer Stay in a Place than uſually they do; a Day more in a County would be a very good Addition; altho their Salary for their Circuits were increaſed in Proportion: it would ſuit better with the Gravity of their Employment. Whereas, now they are ſometimes obliged to riſe too early, and ſit too late, for the Diſpatch of their Buſineſs; to the extraordinary Trouble of themſelves, and of the People: and, what is principally to be regarded, have not leiſure to inform themſelves of the true State of the Country.

Sheriffs of the Counties to attend the Judges. 18. The Attendance of the *Sheriffs of the Counties*, accompanied with the principal Gentlemen, in a comely, and not coſtly Equipage, upon the Judges of the Aſſize, at their coming to the Place of their ſitting, and at their going out, is not only a Civility, but alſo of Uſe: as it raiſes a Reverence to the Perſons and Places of the Judges; who coming from the King himſelf on ſo great an Errand, ſhould not be neglected.

19. If

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19. If any one ſue to be made a Judge, I ſhould ſuſpect him: but if either directly or indirectly he ſhould bargain for a Place of Judicature, let him be rejected with Shame; *Vendere jure poteſt, emerat ille prius.* *No Place of Juriſdiction to be ſold.*

20. When the Place of a Chief Judge of a Court becomes vacant, a puiſne Judge of that Court, or of another Court, who has approved himſelf fit and deſerving, ſhould be ſometimes preferred. This would be a good Encouragement for him, and others by his Example. *The Puiſne to be preferred to Chief Judges.*

21. Next to the Judge, Care ſhould be uſed in the Choice of ſuch as are called to the Degree of Serjeants at Law; for ſuch they muſt be firſt, before they are made Judges: and none ſhould be made Serjeants but ſuch as probably might be held fit for Judges afterwards; when the Experience at the Bar has fitted them for the Bench. Therefore, by all means, ſuppreſs the unworthy Courſe of late in Uſe, of paying Money for it: which may ſatisfy ſome Courtiers, but is no Honour to the Perſon preferred; nor to the King, who thus prefers them. *Serjeants at Law.*

22. The King's Council at Law, eſpecially his *Attorney* and *Sollicitor General*, being of continual Uſe in the King's Service; not only for his Revenue, but for all the Parts of his Government; ſhould doubtleſs be Men every way fit and able for that Employment: they ſhould be learned in their Profeſſion; not ignorant in other things; and dextrous in thoſe Affairs, the Diſpatch whereof is committed to them. *The King's Council at Law. Attorney and Sollicitor-General.*

23. The King's *Attorney of the Court of Wards* is in the true Quality of a Judge; therefore what has already been obſerved of the Judges, intended principally of the three great Courts of Law at *Weſtminſter*, may be applied to the Choice of the Attorney of this Court. And the like for the Attorney of the Dutchy of *Lancaſter*; who partakes of both Qualities, partly of a Judge in that Court, and partly of an Attorney-General; for ſo much as concerns the proper Revenue of the Dutchy. *Attorney of the Wards and Dutchy.*

24. The Judges of the four Circuits in the twelve Shires of *Wales*, tho they are not of the firſt Magnitude, nor need be of the Degree of the Coif; except the Chief Juſtice of *Cheſter*, who is one of their Number; yet their Choice ſhould be directed by the ſame Rules as for the other Judges. And indeed theſe ſometimes are, and fitly may be, tranſplanted into the higher Courts. *The Welſh Judges.*

25. There are many Courts; ſome ſuperior, ſome provincial, and ſome of a lower Orb: it were to be wiſhed, and is fit to be ſo ordered, that each of them keep within its proper Sphere. The Harmony of Juſtice is ſweeteſt, when there is no jarring about the Juriſdiction of the Courts: which methinks Wiſdom cannot much differ upon; their true Bounds being for the moſt part ſo clearly known. *Contentions about the Juriſdiction of Courts to be prevented.*

26. Thus much for the *Judges*; next for the principal Miniſters of Juſtice. The High-Sheriffs of the Counties have been very ancient in this Kingdom; I am ſure before the Conqueſt: and ſuch muſt be choſe as are fit for the Office; which is of great Truſt and Power; the *Poſſe Comitatus*, the Power of the whole County, being legally committed to them. Therefore it is agreeable to the Intention of the Law, that the Choice of them *The High-Sheriffs.*

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them ſhould be by the Recommendation of the great Officers of the Kingdom; and by Advice of the Judges; who are preſumed to be well apprized of the Condition of the Gentry of the whole Kingdom: and altho the King may do it of himſelf, yet the old way is the good way.

Not to be prick'd or excuſed for Money.

27. I utterly condemn the Practice lately crept into the Court; that ſome who are pricked for Sheriffs, and were fit, ſhould get out of the Bill; and others who were neither thought on, nor worthy, ſhould be nominated: and both for Money.

Lieutenants and Deputy Lieutenants of Counties.

28. As for the Lord *Lieutenants*, and Deputy *Lieutenants of the Counties*; their proper Uſe is for the Management of military Affairs, againſt an Invaſion from abroad, or a Rebellion or Sedition at home. Good Choice ſhould be made of them, prudent Inſtructions given them, and as little of the arbitrary Power, as poſſible, left them. And let not the Muſter-Maſters, and other Officers under them, incroach upon the Subject; for this will detract much from the King's Service.

Juſtices of Peace.

29. The *Juſtices of Peace* are of great Uſe. Anciently there were Conſervators of the Peace: theſe are the ſame; only ſeveral Acts of Parliament have altered their Denomination, and enlarged their Juriſdiction in many Particulars [y]: and the fitter they are for preſerving the Peace of the Kingdom, the more Care ſhould to be taken in the Choice of them.

Not to be choſe for Favour.

30. But none ſhould be put into either of theſe Commiſſions, with an Eye of Favour to their Perſons; to give them Countenance or Reputation in the Places where they live; but for the King's Service only: nor ſhould any be turned out for the Diſfavour of any great Man. This has been often uſed; and proved of no good Service to the King.

Juſtice and Mercy, how to be mixed.

31. Let it be well obſerved that the Execution of Juſtice is committed to the Judges, which ſeems the ſeverer Part; but the milder Part, which is Mercy, is wholly left in the King's immediate Hand: and Juſtice and Mercy are the true Supports of the Throne. If the King ſhall be wholly intent upon Juſtice, it may appear too rigid; but if he be over-remiſs and eaſy, it draws Contempt upon him. Examples of Juſtice muſt ſometimes be made for Terror; Examples of Mercy ſometimes for Comfort to others: the one procures Fear, and the other Love. If a King be not both feared and loved, he is loſt.

The Court of Parliament,

32. The Court of Parliament in *England* is ſuperlative; and therefore it will become me to ſpeak the more cautiouſly of it. Its Inſtitution is very ancient in this Kingdom. It conſiſts of the two Houſes, of the Peers and Commons, as the Members; and of the King's Majeſty, as the Head of that great Body. By the King's Authority alone, and by his Writs, they are aſſembled; and by him alone are they prorogued and diſſolved: but each Houſe may adjourn itſelf.

are a Council to the King.

33. Being thus aſſembled, they are more properly a Council to the King, than a Court; the great Council of the Kingdom, to adviſe his Majeſty in thoſe things of Weight and Difficulty, which concern both the King and People.

34. No

[y] See *Supplement* XV. *Sect.* II.

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34. No new Laws can be made, nor old *Laws* abrogated or altered, but by common Conſent in Parliament; where Bills are prepared and preſented to the two Houſes, and then delivered; but nothing is concluded without the King's Royal Aſſent: Laws are but Embryos, till he gives them Life. *Laws, how paſſed.*

35. Yet the *Houſe of Peers* has a Power of Judicature in ſome Caſes; properly to examine, and then to affirm; or if there be Cauſe, to reverſe the Judgments, which have been given in the Court of King's-Bench, the Court of higheſt Juriſdiction in the Kingdom for ordinary Judicature: but in theſe Caſes it muſt be done by Writ of Error *in Parliamento*. And thus the Rule of their Proceedings is not *abſoluta poteſtas*, as in making new Laws; but *limitata poteſtas*, according to the known Laws of the Land [a]. *The Houſe of Peers a Court of Judicature.*

36. The Houſe of Commons have only Power to cenſure the Members of their own Houſe, in point of Election or Miſdemeanors, in or towards that Houſe; and have not, nor ever had Power, ſo much as to adminiſter an Oath to prepare a Judgment. *The Power of the Houſe of Commons.*

37. The true Uſe of *Parliaments* in this Kingdom, is very excellent: and they ſhould be often called, as the Affairs of the Kingdom require; and continued as long as is neceſſary, and no longer: otherwiſe they are but Burdens to the People, by reaſon of the Privileges juſtly due to the Members of the two Houſes and their Attendants; which their juſt Rights and Privileges, are religiouſly to be obſerved and maintained: but if they ſhould be unjuſtly enlarged, beyond their true Bounds, they might leſſen the juſt Power of the Crown; as bordering ſo near upon Popularity. *Uſe of the Parliament.*

38. Thus far we have ſpoke of the Common Law of *England*, generally and properly ſo called; becauſe 'tis moſt general and common to almoſt all Caſes and Cauſes, both civil and criminal: but there is alſo another Law, called the *Civil* or *Eccleſiaſtical Law*, which is confined to ſome few Heads; and this is not to be neglected. And altho I am a Profeſſor of the Common Law, yet I earneſtly adviſe that the *Civilians* be not diſcountenanced nor diſcouraged: otherwiſe, when we ſhall have to do with any foreign King or State, we ſhall be at a miſerable Loſs for want of learned Men in that Profeſſion. *The Civil Law.* *Civilians.*

III.

39. We come now to conſider thoſe things which relate to Counſellors of State, the Council-Table, and the great Offices and Officers of the Kingdom. Of Counſellors there are two ſorts; the firſt, *Conſiliarij nati:* ſuch are the Prince of *Wales*, and others of the King's Sons, who are born Counſellors to the King; and are early to learn the Art of Governing. But the ordinary ſort of Counſellors are ſuch as the King, out of a due Conſideration of their Worth, Abilities, and Fidelity to his Perſon and Crown, calls to be of Council with him, in his ordinary Government. And the Council-Table *Two Sorts of Counſellors.*

[a] See *Vol.* I. *pag.* 240, *&c.*

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The Council-Table. Table is ſo called from the Place where they uſually aſſemble and ſit: and their Oath is the only Ceremony uſed, to make them ſuch; which Oath is ſolemnly given them at their firſt Admiſſion. Theſe honourable Perſons are from thenceforth of that Board and Body; and cannot come till they are thus called: and the King, at his Pleaſure, may ſpare their Attendance; which they at their own Pleaſure may not do.

The Council, how to be choſe. 40. The *Council* therefore muſt be choſen of Perſons of great Truſt, Fidelity, Wiſdom, and Judgment, who are to aſſiſt in bearing up the King's Throne; and of known Experience in publick Affairs. Yet it may not be unfit to call ſome that are younger, to train them up in that Trade; and ſo fit them for thoſe weighty Affairs, againſt the time of greater Maturity; and ſome alſo for the Honour of their Perſons: but theſe two ſorts not to be tied to ſo ſtrict Attendance as the others, from whom the preſent Diſpatch of Buſineſs is expected.

Their Number to be limited. 41. I could wiſh that their Number might not be too great: the Perſons of the Counſellors would then be the more venerable. And Queen *Elizabeth*, in whoſe time I had the Happineſs to live many Years, was not ſo much obſerved for having a numerous, as a wiſe Council.

Deputy Privy-Counſellors. 42. The Deputy of a Privy-Counſellor to the King, I conceive, is, not only to attend the Council-Board, at the times appointed; and there to conſult of what ſhall be propoſed; but alſo to ſtudy thoſe things which may advance the King's Honour and Safety, and the Good of the Kingdom; and to communicate the ſame to the King, or to his Fellow-Counſellors, as there ſhall be Occaſion.

Privy-Counſellors not to give Opinion of a ſudden. 43. And when any new thing ſhall be propoſed to Conſideration, it were adviſeable that no Counſellor ſuddenly deliver'd any poſitive Opinion thereof; becauſe it is not eaſy with all Men to retract their Opinions, tho there ſhould be Cauſe for it: but only, at moſt, to break it, at firſt, that it may be the better underſtood againſt the next Meeting.

Reſolutions not to be precipitated. 44. When any Matter of Weight has been debated, and ſeems ready for a Reſolution; I could wiſh it might not be concluded at that Sitting, if the Neceſſity of the time do not preſs it; leſt, upon ſecond Thoughts, there ſhould be Cauſe to alter: which is not for the Gravity and Honour of that Board.

The King to be preſent. 45. I wiſh alſo that the King would be pleaſed ſometimes to be preſent at that Board; it adds a Majeſty to it: and yet not be too frequently there; which would render it leſs eſteemed, when it is become common; and might alſo make the Counſellors not ſo free in their Debates, as they would be in Abſence of the King.

Secrecy required in Privy-Counſellors. 46. Beſides the giving of Counſel, the Counſellors are bound by their Duties, *ex vi termini*, as well as by their Oaths, to keep Counſel; and they are therefore called *de privato conſilio Regis*; *& a ſecretioribus conſiliis Regis*. One thing I add, in the Negative, which is not fit for that Board; the entertaining of private Cauſes, of *meum & tuum*: theſe ſhould be left to the ordinary Courſe and Courts of Juſtice.

47. As

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47. As great Care ſhould be uſed, in chooſing the Counſellors themſelves; ſo likewiſe in chooſing the Clerks of the Council, for Secrecy of Conſultation: and it were fit that his Majeſty gave ſtrict Charge, and bound it alſo with a ſolemn Order, that no Copies of the Orders of that Table be delivered out by the Clerks of the Council, but by the Order of the Board: nor any one, not being a Counſellor, or a Clerk of the Council, or his Clerk, to have Acceſs to the Council-Books; and, to this purpoſe, that the Servants attending the Clerks of the Council be bound to Secrecy, as well as their Maſters. *Counſellors, how to be choſen.*

48. As to the great Offices and Officers of the Kingdom, there need little be ſaid; the greateſt part of them being ſuch, as cannot well be ſevered from the Counſellorſhip: and therefore the ſame Rules are to be obſerved in the Choice of both. But in the Quality of the Perſons, I conceive it moſt convenient to have ſome of every ſort, as it was in the time of Queen *Elizabeth*; one Biſhop at leaſt, in reſpect of Queſtions touching Religion, or Church-Government; one or more ſkilled in the Laws; ſome for martial Affairs; and ſome for foreign Affairs: by this Mixture, one will help another in all things, that ſhall happen to be moved. But if this ſhould fail, it will be a ſafe way, to conſult with ſome other able Perſons, well verſed in that point, which is the Subject of their Conſultation. And this may be done ſo warily, as not to diſcover the principal End therein. *The great Offices and Officers.*

IV.

49. We come next to foreign Negotiations and Embaſſies. *Embaſſies*

With regard hereto it was the Courſe of Queen *Elizabeth* to vary, according to the Nature of the Employment, and the Quality of the Perſons ſhe employed; which is a good Rule to go by.

50. If it were an Embaſſy of Congratulation or Ceremony, (which muſt not be neglected) Choice was made of ſome noble Perſon, eminent in Place, and able in Purſe; who would take it as a Mark of Favour; and diſcharge it, without any great Burden to the Queen's Coffers, for his own Honour. *of Ceremony.*

51. But if it were an Embaſſy of Weight, concerning Affairs of State, Choice was made of ſome grave Perſon, of known Judgment, Wiſdom, and Experience; and not of a young Man unpractiſed in State Matters; nor of a mere formal Man, whatever his Title or Outſide ſhould be. *Embaſſies of Buſineſs.*

52. Yet in Company of ſuch were uſually ſent ſome promiſing young Noblemen, or Gentlemen, as Aſſiſtants or Attendants, according to the Quality of the Perſons; who might be thereby prepared and fitted for the like Employment another time. *The Attendants of Embaſſadors.*

53. And along with them were always ſent ſome grave and ſober Men, ſkilful in the Civil Law; ſome in the Languages; and ſome who had been formerly converſant in the Courts of thoſe Princes, and knew their Ways: theſe were Aſſiſtants in private; but not truſted to manage Affairs in publick:

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publick: as that would detract from the Honour of the principal Embaſſador.

Mercantile Negotiations. 54. If the Negotiation were upon Merchants Affairs; then the Perſons uſually employ'd were Doctors of the Civil Law, aſſiſted with ſome other diſcreet Men: and in ſuch Caſes, the Charge was ordinarily defray'd by the Company or Society of Merchants, whom the Negotiation concerned.

Reſidents. 55. If Reſidents, or Agents, were ſent to remain at the Courts of foreign Princes or States; as it was ever held fit, to hold Correſpondence with them upon all Occaſions; ſuch Perſons were made Choice of as were preſumed to be vigilant, induſtrious, and diſcreet; and had the Language of the Place where they were ſent: and with theſe went ſuch as promiſed to be worthy of the like Employment hereafter. Their Care was, to give true and early Intelligence of all Occurrences, either to the Queen herſelf, or the Secretaries of State; to whom they had their immediate Relation.

56. Their Charge was always born by the Queen; and duly paid out of the Exchequer, in ſuch Proportion, as, according to their Qualities and Places, might give them an honourable Subſiſtence abroad: but for the Reward of their Service; they were to expect that upon their Return, by ſome ſuch Preferment as might be worthy of them; and yet be little Burden to the Queen's Coffers or Revenues.

Their Inſtructions. 57. At going out, they had their general Inſtructions in Writing, which might be communicated to the Miniſters of the States whereto they were ſent; they had alſo private Inſtructions, upon particular Occaſions: and at their Return, they always rendered an Account of ſome things to the Queen herſelf; of ſome to the Body of the Council; and of others to the Secretaries of State; who made uſe of them, or communicated them, as there was Occaſion.

The Education of foreign Miniſters. 58. In thoſe Days there was a conſtant Courſe held, by the Advice of the Secretaries, or ſome principal Counſellors, of ſending into ſeveral Parts beyond the Seas, ſome young Men of promiſing Parts, to be trained up, and made fit for ſuch publick Employments; and to learn the Languages. This was at the Charges of the Queen, and run not high; for they travelled but as private Gentlemen: and as their Deſerts appeared by their Induſtry, ſo they were farther employed or rewarded. And this is an excellent Courſe to breed up a Nurſery of ſuch publick Plants.

V.

Wars. 59. We come next to *Peace* and *War*.

Wars are either *foreign* or *domeſtick*: As for a War of Invaſion from abroad; we muſt not be over-ſecure: that is the way to invite it. And for Peace at home; Juſtice is the beſt Protector thereof.

To prevent an Invaſion. 60. In order to prevent any Invaſion or War from abroad, Care muſt be had of our Out-works, the Royal Navy, and the Shipping of our Kingdom; which are the Walls thereof. Every great Ship is an impregnable Fort;

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Fort; and our many ſafe and commodious Ports and Havens, in theſe Kingdoms, are as the Redoubts to ſecure them.

61. No Nation in the World can rival *England* in the Oak-Timber, whereof the Bodies of our Ships are built; and we need not borrow of our Neighbours Iron for Spikes, or Nails to faſten them together: but there muſt be a great deal of Caution uſed, and Proviſion made, that our Ship-Timber be not unneceſſarily waſted. *Naval-Stores.*

62. But for Tackling, as Sails and Cordage, we are beholden to our Neighbours; and buy them for our Money: theſe therefore muſt be foreſeen and ſtored up againſt a time of Need; and not ſought for when we are to uſe them. But we are much to blame, that we make them not at home; only Pitch and Tar we have not of our own. *Tackling.*

63. For the true Art of Building Ships, both for Burden and Service, no Nation in the World exceeds us. Ship-Wrights, and all other Artiſans belonging to that Trade, muſt be cheriſhed and encouraged. *Ship-building.*

64. Powder and Ammunition, of all ſorts, we can have at home; and in exchange for other home Commodities we may be plentifully ſupplied therewith from our Neighbours: which muſt not be neglected. *Ammunition.*

65. This Kingdom is plentifully furniſhed with Mariners and Sea-men. The conſtant Trade of merchandizing will ſupply us at time of Need; and navigable Rivers will repair the Store, both to the Royal Navy, and to the Merchants, if employ'd, and well paid for their Labour. *Sailors.*

66. Sea-Captains, Commanders, and other Officers, muſt be encouraged, and raiſed by degrees; as their Fidelity and Induſtry deſerve it. And never let brave Spirits, that have fitted themſelves for Command, either by Sea or Land, be laid by; as Perſons unneceſſary for the Time. Let Arms and Ammunition of all ſorts be provided and ſtored up, as againſt a Day of Battel; and let the Ports and Forts be ſo fitted, as if by the next Wind we ſhould hear of an Alarm: ſuch a known Proviſion is the ſureſt Protection. *Sea-Officers.*

67. And for a *foreign War*, intended by ourſelves, to enlarge the Bounds of our Empire; I have no Opinion either of the Juſtneſs or Fitneſs of it: our own Territories ſeem large enough, and are naturally bounded by the Ocean. And it were very hard to attempt ſuch a War with Hopes of Succeſs; as the Subjects of this Kingdom believe it illegal to be forced beyond the Seas, without their own Conſent, upon Expectation of an unwarranted Conqueſt; but to reſiſt an invading Enemy, or to ſuppreſs Rebels, the Subject may, and ſhould be commanded out. The whole Kingdom muſt be one entire Body; otherwiſe that Saying will be verified, *Dum ſingu-li pugnamus, omnes vincemur.* *Foreign Wars.*

68. Our ſtrict League of Amity and Alliance with the *Dutch*, is a mutual Strength to both; and the Shipping of both, in Conjunction, being ſo powerful, no Foreigner will venture upon it. This League and Friendſhip muſt inviolably be obſerved. *Alliance with Holland.*

69. There remains then no Danger to this Kingdom, but from a *Civil War*; which is the moſt deſperate of all. The King's Wiſdom and Juſ- *Civil War.*

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tice muſt foreſee and prevent it; or if it ſhould happen, quench ſuch a Wildfire, with all poſſible Diligence. The Cures of a Civil War are effected either by preventive Remedies; which by juſt and equal Government take away the Occaſion; or by ſevere ones, if the other prevail not. The Service and Vigilancy of the Deputy-Lieutenants in every County, and of the High-Sheriffs, will herein contribute much to our Security. But if this ſhould not prevail, peccant Humours, and the Diſaffected, muſt by a timely Enquiry be diſcovered, purged out, or cut off. Mercy, in ſuch a Caſe, is real Cruelty in a King. Yet if the Heads of the Tribes can be taken off, and the miſled Multitude will ſee their Error, and return to their Obedience; ſuch an Extent of Mercy is both honourable and profitable.

Money. 70. A King, againſt a Storm, muſt ever provide a convenient Stock of Treaſure; and neither be without Money, which is called the Sinews of War; nor depend upon the Curteſy of others, which may fail at a Pinch.

Magazines. 71. He muſt alſo have a *Magazine* well-ſtored with all ſorts of Arms and Engines of War; which alſo muſt be had from foreign Parts, or provided at home; and committed to ſeveral Places, under the Cuſtody of truſty and faithful Miniſters and Officers.

Experienced Commanders. 72. He muſt make choice of experienced and able Commanders, to conduct and manage the War, both againſt a foreign Invaſion, and a domeſtick Rebellion; who ſhould not be young and giddy, but fit to govern others as well as themſelves.

73. Let not ſuch be diſcouraged, if they deſerve well, by Miſ-information, or for ſatisfying the Humours or Ambition of others; perhaps, out of Envy; perhaps, out of Treachery, or other ſiniſter Ends. A ſteddy Hand in governing military Affairs, is more requiſite than in Affairs of Peace; becauſe an Error committed in War, may, perhaps, prove irretrievable.

The Conduct to be obſerved when a Civil War is ended. 74. When a Civil War is ended, thoſe who have been found faithful in the Land, muſt be regarded and rewarded; the traiterous, or treacherous, who have miſled others, ſeverely puniſhed; and the Neutrals and falſe-hearted Friends and Followers, who have ſtarted aſide like a broken Bow, be noted.

VI.

Trade at home. 75. We now turn to Trade: and this likewiſe is either domeſtick or foreign. We begin with home Trade; which enables the Subject to live; and lays the Foundation for a foreign Trade, by Traffick.

Tillage. 76. And firſt; Tillage muſt be encouraged, to ſupply the Kingdom with Corn for the Natives, and to ſpare for Exportation. I remember more than once, in times of Dearth, when it drained much Coin out of this Nation, to furniſh us with Corn from foreign Parts.

Improvements in Husbandry. 77. Good Huſbands will find means of improving their Lands by Lime, Chalk, Marle, or Sea-ſand; where it can be had: but they ſhould be put in mind thereof, and encouraged in their Induſtry.

78. Planting

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78. Planting of Orchards, in a Soil and Air fit for them, is very profitable, as well as pleaſant. Cyder and Perry are good Beverage in Sea Voyages.

79. Gardens likewiſe are very profitable, if planted with Artichokes, Roots, and ſuch other things as are fit for Food; whence they are properly call'd Kitchen-Gardens. *Gardening.*

80. The planting of Hop-Yards, and the ſowing of Woad, and Rape-Seed, are found very profitable for the Planters, in Places fit for them; and conſequently profitable for the Kingdom; which for ſeveral Years was furniſhed with them from beyond the Seas. *Hop-Yards, Woad, &c.*

81. The planting and preſerving of Wood-Lands, eſpecially thoſe productive of Timber, is not only profitable, but commendable; to furniſh Poſterity, both for Building and Shipping. *Woods.*

82. The Kingdom might be much improved by draining of drowned Lands, and recovering them from the overflowing both of ſalt and freſh Waters. And many ſuch Grounds would be very fit for Dairies; which when well look'd after, are exceedingly commodious[a]. *Draining.*

83. Much good Land might be gained from Foreſts and Chaſes, more remote from the King's Acceſs, and from other Places of Common; provided due Care be taken that the poor Commoners receive no Injury by ſuch Improvement. *Foreſts and Commons to be improved.*

84. The making of navigable Rivers would prove very profitable; they being as ſo many Inlets of Wealth, by conveying Commodities with eaſe from Place to Place. *Navigable Rivers.*

85. The planting of Hemp and Flax for Linen Cloth and Cordage, would be an unknown Advantage to the Kingdom; many Places therein being as fit for it, as any foreign Parts. Underſtand the ſame of Wool and Leather of the Kingdom, if they be converted into Manufactures. *Sowing of Hemp and Flax.*

86. Let the Vanity of the Times be reſtrained, which the Neighbourhood of other Nations has introduced: and we ſtrive apace to exceed our Pattern. Let Vanity in Apparel, and which is more vain, that of the Faſhion, be avoided. In *Spain*, they allow the Players and Curteſans the Vanity of rich and coſtly Cloaths; but to ſober Men and Matrons, they forbid it upon pain of Infamy: a ſeverer Puniſhment upon ingenuous Natures than a pecuniary Mulct. *Luxury to be reſtrained in Cloaths,*

87. Exceſs in coſtly Meats and Drinks, fetch'd from beyond the Seas, ſhould be avoided: wiſe Men will avoid this without a Law; and I wiſh there might be a Law to reſtrain others. The Exceſs of Wine coſts the Kingdom much; and returns nothing but Surfeits and Diſeaſes. Were we as wiſe as we eaſily might be, within a Year or two at the moſt, if we would needs drink Wine, we might drink it for half the Coſt *. *and Diet:*

88. But

[a] See Mr. *Buſhell's Abridgement of the Lord* Bacon's *Philoſophical Theory, in Mineral Proſecutions.*

* The Author appears to mean, by planting Vines in *England*; which if well underſtood and regulated, would not fail of Succeſs; as we learn, not only from the ancient Hiſtories of *England*; but alſo from modern Experience.

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The native Commodities to be uſed.

88. But inſtead of crying up all things, which are either brought from beyond Sea, or wrought here by the Hands of Strangers; let us advance the native Commodities of our own Kingdom, and employ our Countrymen before Strangers; let us turn the Wool of the Land into Cloths and Stuffs; and the Hemp and Flax growing here, into Linen Cloth and Cordage: it would ſet many thouſand Hands on work, and thereby one Shilling worth of the Materials, would, by Induſtry, be multiplied to five, ten, and often twenty times the Value when wrought. But of all ſorts of Thrift for the publick Good, I would principally recommend the Encouragement of Huſbandry; and the Improvement of Lands for Tillage: there is no ſuch Uſury as this. The King cannot enlarge the Bounds of theſe Iſlands, which make up his Empire; the Ocean being the unremoveable Wall which incloſes them; but he may enlarge and multiply the Revenue thereof, by this honeſt and innocent Way of Huſbandry.

Engliſh *Laces to be encouraged.*

89. Our *Engliſh* Ladies are much given to the wearing of coſtly Laces, *&c.* and, if brought from *Italy*, *France*, or *Flanders*, they are in great Eſteem; whereas if the like were made by the *Engliſh*, ſo much Thread as would make a Yard of Lace, being put into that Manufacture, would be five times, or perhaps ten or twenty times, the Value.

Grazing.

90. The breeding of Cattle is great Profit; eſpecially the breeding of Horſes, in many Places, not only for Labour, but for the Saddle; the *Engliſh* Horſe, for Strength, Courage and Swiftneſs, not being inferior to the Horſes of any other Kingdom.

Mining.

91. The Minerals of the Kingdom, eſpecially Lead, Iron, Copper, and Tin, are of great Value, and ſet many able bodied Subjects to work: it is great Pity the Buſineſs of Mining ſhould not be induſtriouſly proſecuted.

Fiſheries.

92. But ſcarce any thing is more advantageous than fiſhing upon the Coaſts of theſe Kingdoms; and the Seas belonging to them: our Neighbours, within half a Day's Sail of us, with a good Wind, can ſhew us the Uſe and Value thereof. And, doubtleſs, there is Sea-room enough for both Nations, without offending one another; and it would exceedingly ſupport the Navy.

Merchandizing.

93. This Kingdom is much enriched of late by the Trade of Merchandize, which the *Engliſh* drive in foreign Parts; and, if it be wiſely managed, it muſt of Neceſſity prove very beneficial: Care being taken, that the Exportation exceed the Importation in Value; for then the Balance of Trade muſt be returned in Coin or Bullion. This would eaſily be effected, if the Merchants were to make their Returns in ſolid Commodities, and not too much thereof in Vanity, tending to Exceſs.

Monopolies to be prevented.

94. But ſpecial Care muſt be taken, that Monopolies, which are Cankers of all Trade, be not admitted, under ſpecious Colours of publick Good.

95. To put all this under a Regulation; if a conſtant Commiſſion, to Men of Honeſty and Underſtanding, were granted, and well purſued, for directing the Management of theſe things, both at home and abroad, to beſt Advantage; and this Commiſſion were made ſubordinate to the Council-Board, it is conceived very good Effects would follow.

VII.

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VII.

96. The next thing, is that of *Colonies* and *foreign Plantations*; which are very neceſſary, as Outlets to a populous Nation, and may be profitable alſo, if managed diſcreetly. *Plantations.*

97. The Choic of the Place requires many Circumſtances; *viz.* (1.) that the Situation be near the Sea, for the ſake of a commodious Intercourſe with *England*; (2.) that the Temper of the Air and Climate be ſuch as may beſt agree with the Conſtitutions of the *Engliſh*, rather inclining to Cold than Heat; (3.) that the Place be ſtored with Woods, Mines, and Fruits, which are natural to the Place; (4.) that the Soil be ſuch as will probably prove fruitful for Corn, and other Conveniencies; and for breeding of Cattle; (5.) that it have Rivers both for Paſſage between Place and Place, and alſo for fiſhing; and, (6.) that the Natives be not ſo numerous, but that there may be Elbow-room enough for them: all which are likely to be found in the *Weſt-Indies*. Choice of the Place *for Plantations.*

98. The Place alſo ſhould be ſuch as is not already planted by the Subjects of any Chriſtian Prince or State; nor too nearly bordering upon their Plantation. And it would be more convenient, to be choſen by ſome of thoſe Gentlemen or Merchants who firſt move in the Work; than to be aſſigned them from the King: for it muſt proceed from the Option of the People, elſe it ſounds like an Exile; ſo that the Colonies muſt be raiſed by the leave of the King, and not by his Command.

99. After the Place is choſe, the firſt ſtep muſt be, to chooſe a fit Governor; who, altho he have not the Name, yet muſt have the Power of a Viceroy: and if the Perſon, who principally moved in the Work, be not fit for that Truſt; yet he ſhould not be excluded from Command; but then his Defect, in the governing Part, muſt be ſupplied by Aſſiſtants to be joined with him, or ſuch as he ſhall very well approve of. *Their Governors.*

100. At their ſetting out, they muſt have their Commiſſion, or Letters-Patent from the King; that they may acknowledge their Dependance, and be under the Protection of the Crown of *England*: and they muſt receive ſome general Inſtruction how to diſpoſe of themſelves, when they come there; which ſhould be in the Nature of Laws to them. *Their Commiſſion and Inſtruction.*

101. But the general Law, by which they muſt be guided and governed, ſhould be the Common Law of *England*; and to that End, it will be fit that ſome Man, reaſonably ſkilled in the Law, and otherwiſe qualified for ſuch a Purpoſe, be inclined, or perſuaded, to go thither as a Chancellor among them, at firſt; and when the Plantation is more ſettled, then to have Courts of Juſtice there as in *England*. *Their Laws.*

102. For the Diſcipline of their Church; it will be neceſſary to have it agree with what is ſettled in *England*, elſe it will make a Schiſm and a Rent in *Chriſt's* Coat, which muſt be ſeamleſs; and, to this Purpoſe it will be proper, that, by the King's ſupreme Power in Cauſes eccleſiaſtical, within all his Dominions, they be ſubordinate to ſome Biſhop and Biſhoprick of this Kingdom. *Their Religion.*

103. At

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Their Forces and Defence. 103. At the first planting, or as soon after as possible, they must defend themselves both against the Natives, and Strangers; and to that Purpose, must have the Assistance of some able military Man; convenient Arms and Ammunition; lest, on a sudden, they be exposed a Prey to some other Nation, when they have fitted the Colony for them.

104. For their better Defence against a common Enemy; it seems best, that foreign Plantations should be placed in one Continent, and near together: for if they are too remote from one another, they will be dis-united, and weaker.

Their Beginning. 105. They must provide themselves of such Houses as they can, for the present; and, at more leisure, such as are better: and they must first plant for Corn and Cattle, *&c.* for Food and necessary Sustenance; and after, they may enlarge themselves to those things, which may be for Profit, Pleasure, and Traffick.

Their Employs. 106. Wood for Shipping, in the first place, may doubtless be there had, and Minerals found; however Mines out of the Fruits of the Earth, and Seas, and Waters adjoining, will not be wanting.

Trades. 107. Regard must be had to employ the Colony in profitable Trades and Manufactures, such as the Clime will best suit, and such as may be useful to this Kingdom; and return to them an Exchange of necessary things.

Shipping. 108. In a short time they may build Vessels and Ships, for Traffick with the Parts near adjoining, and with *England* also; from whence they may be furnished with such things as they want; and, in Exchange or Barter, send from thence others, with which, either by Nature or Art, they may soon abound.

No Outlaws, &c. to be admitted. 109. But no known Bankrupt, for Shelter; nor known Murderer or other wicked Person, to avoid the Law; nor known Heretick or Schismatick, should be suffered to go into those Countries; or if they do creep in there, they must not be harboured or continued: else the Place would receive them bad, and return them to *England*, upon all Occasions, worse.

Their Trade to be regulated. 110. Let the Trade, to and from the Plantations, be so ordered, that some few Merchants and Tradesmen may not, under colour of furnishing the Colonies with Necessaries, grind them, so as shall always keep them in Poverty.

Commissioners of Plantations. 111. And to regulate all these Inconveniencies, which will insensibly grow upon them, it were advisable the King should erect a subordinate Council in *England*; whose Care and Charge it should be, to advise and put in Execution, all things which shall be found fit for the Good of the new Plantations; and who, upon all Occasions, shall give an Account of their Proccedings to the King, or to the Council-Board; and from them receive such Directions as may best agree with the Government of the Place.

The Duties, how to be laid. 112. The King's reasonable Profits are not to be neglected; and may arise from Reservation of moderate Rents and Services; by Customs and Duties upon the Exportation, and Importation of Merchandize: which, for a convenient time after the Plantation begins, should be very easy, to encourage

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encourage the Work; but after it is well ſettled, may be raiſed to a conſiderable Proportion. Care muſt be taken, that, when the Induſtry of one Man has ſettled the Work, a new Man, by Inſinuation, or Miſ-information, may not ſupplant him; which is the Diſcouragement of all faithful Endeavours.

VIII.

113. We come now to the laſt thing propoſed; *viz.* the *Court* and *Curiality.* *The Court.*

The King in his own Perſon, both in reſpect of his Houſhold or Court, and in reſpect of his whole Kingdom (for a little Kingdom is but as a great Family) muſt be exemplary: *Regis ad exemplum*, &c. But Kings are Men; and ſeaſonable *Memento's* may be uſeful: and being diſcreetly given, cannot but be well taken. And here an Admonition from a dead Author, or a Caveat from an impartial Pen, whoſe Aim neither was, nor can be taken, as any particular By-Deſign, will prevail more, and have a better Effect, than a down-right Advice; which perhaps may be miſtaken, as if it were ſpoken magiſterially. *Kings, how to be adviſed.*

114. And in the next Place, the *Prime Miniſter* muſt give no juſt Cauſe of Scandal, either by light, vain, or oppreſſive Carriage. *The Conduct of the Miniſter.*

115. The great Officers of the King's Houſhold had need be diſcreet and provident Perſons, both for his Honour, and for his Profit; they muſt look both Ways, elſe they are but half-ſighted: yet in the Choice of them, there is more Latitude left to Affection, than in the Choice of Counſellors, and the great Officers of State, who muſt always be choſe merely out of Judgment; for in them the Publick has a great Concern. *Great Officers of the Houſhold.*

116. The other miniſterial Officers in Court, as for Diſtinction ſake they may be termed, alſo require an Eye upon them. They have uſually riſen in the Houſhold by Degrees; and it is a noble Way to encourage faithful Service: but the King muſt not bind himſelf to a Neceſſity herein; for then it would be held *ex debito:* neither muſt he alter it, without an apparent Cauſe. But to diſplace any who are in, upon Diſpleaſure, which uſually happens upon the Information of ſome great Man, is, by all means, to be avoided; unleſs there be a manifeſt Reaſon for it. *The other miniſterial Officers.*

117. But it ſeems beſt to leave the ordering of the Houſhold-Affairs to the White-Staffs, who are thoſe honourable Perſons, to whom it properly belongs, and are anſwerable to the King for it; and to thoſe other Officers of the Green-Cloth, who are ſubordinate to them, as a kind of Council, and alſo a Court of Juſtice. Tho for the Green-Cloth Law, in the largeſt Senſe, I have no Opinion of it, farther than it is regulated by the juſt Rules of the Common Laws of *England.* *The White-Staffs, and Green-Cloth.*

118. Towards the Support of his Majeſty's own Table, and of the Princes, and of his neceſſary Officers, his Majeſty has a good Help by Purveyance, which juſtly is his Due; and, if juſtly uſed, is no great Burden to the Subject: but by the Purveyors, and other under Officers, it is often *The Purveyance.*

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often abuſed. In many Parts of the Kingdom it is reduced to a Certainty in Money; and if it be indifferently and diſcreetly managed, it would be no hard matter to ſettle it ſo throughout the whole Kingdom; tho to be renewed from time to time: for that will be the beſt and ſafeſt, both for King and People.

The Revenues. 119. The King muſt be put in mind to preſerve the Revenues of his Crown, both certain and caſual, without Diminution; and to lay up Treaſure in Store againſt a time of Extremity. Empty Coffers give an ill ſound; and make the People many times forget their Duty; thinking that the King muſt be beholden to them for his Supplies.

No Officers to be rewarded with Forfeitures. 120. I by no means think it fit, that the King ſhould reward any of his Servants with the Benefit of Forfeitures, either by Fines in the Court of Star-Chamber, or High-Commiſſion Courts, or other Courts of Juſtice; or that they ſhould be farm'd out, or beſtowed upon any, ſo much as by Promiſe, before Judgment given: this would neither be profitable nor honourable.

Maſques and publick Entertainments. 121. Laſtly; beſides Matters of ſerious Conſideration, in the Courts of Princes, there muſt be times for Recreation and Sports: when there is a Queen, and Ladies of Honour attending her, there muſt ſometimes be Maſques, and Revels, and Interludes. And when there is no Queen, or Princes, yet at Feſtivals, and for the Entertainment of Strangers, or upon ſuch Occaſions, they may be proper alſo. But Care ſhould be taken, that, in ſuch Caſes, they be ſet off more with Wit and Livelineſs, than with Coſt and waſteful Expence [b].

[b] For more upon the whole of this uſeful Subject, ſee the Author's *Eſſays*, *Sect.* III.

SUP-

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SUPPLEMENT XIV.

A

PROPOSAL

FOR A

NEW DIGEST

OF THE

LAWS of ENGLAND;

Made to King *JAMES* I. *

* See *Vol.* I. *pag.* 259.

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A PROPOSAL *for a New* DIGEST *of the* LAWS.

1. AMONG the Degrees and Acts of heroical Honour, the firſt or ſecond is the Perſon and Merit of a *Law-giver* [c]. Princes, who govern well, are Fathers of the People: but if a Father educate his Son well, or allow him liberally while he lives; yet leaves him nothing at his Death, whereby both he and his Deſcendants may be the better; the Care and Piety of a Father is not here compleat. So Kings, who make a Portion of an Age happy by their good Government; yet, if they do not make Teſtaments, whereby a Perpetuity of Good may deſcend to their Country, they are but mortal, and tranſitory Benefactors. *Kings to perpetuate their People's Good by Laws.*

2. If any of the meaner Politicians, whoſe Talent it is to ſee the worſt of things, ſhall think, that Laws are but Cobwebs; that good Princes may do well without them; and that bad ones will not value them much; they judge neither well nor wiſely. For certainly, good Laws are ſome Bridle to bad Princes; and as a Wall about Government. And if Tyrants ſometimes make a Breach into them, yet they mollify even Tyranny itſelf; as *Solon*'s Laws did the Tyranny of *Piſiſtratus*: and beſides, they commonly riſe again, upon the firſt Advantage of better times. *The Uſe of Laws, with regard to Princes.*

3. Other Means to perpetuate the Memory, and Merits of Sovereign Princes, are inferior to this. The Building of Temples, Tombs, Palaces, Theatres, and the like, are honourable things; and look big upon Poſterity: but *Conſtantine* the Great gave a proper Appellation to ſuch Works, when he call'd *Trajan*, who was a great Builder, by the Name of *Parietaria*, or Wall-Flower; becauſe his Name was upon ſo many Walls. *Adrian*'s Vein was better; for he determined to wreſtle a Fall with Time: and going frequent Progreſſes over all his Empire; whenever he found any Decays of Bridges, or Highways, or Cuts of Rivers and Sewers, or Walls, or Banks, or the like, he gave ſubſtantial Orders for their Repair. He alſo granted Multitudes of Charters and Liberties for the Comfort of decay'd Companies and Corporations: ſo that his Bounty ſtrove with the Ruins of Time. Yet tho this was an excellent Diſpoſition, it reached, in effect, but to the Shell and Outſide of a Commonwealth: it avail'd nothing to Virtue or Vice. A bad Man might take the Benefit and Eaſe of *Laws the beſt Means of perpetuating the Memory of Princes.*

[c] See below, §. 20.

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of the Ways and Bridges, as well as a good one; and a bad People might purchaſe good Charters. The better Works of Perpetuity in Princes, are doubtleſs thoſe that waſh the Inſide of the Cup: ſuch as Foundations of Colleges, and Lectures for Learning, and the Education of Youth; Foundations and Inſtitutions of Orders, and Fraternities, for Nobleneſs, Enterprize, Obedience, and the like. Yet theſe too are but like Plantations of Orchards and Gardens, in Spots of Ground, here and there; they do not Till the whole Kingdom, and make it fruitful, like the eſtabliſhing of good Laws and Ordinances; which renders a whole Nation as a well regulated College or Foundation.

Examples of the Thing in Hiſtory.

4. This kind of Work is rare enough in Hiſtory, to ſhew it excellent; yet not ſo rare as to make it ſuſpected for impoſſible, inconvenient, or unſafe. *Moſes*, who gave Laws to the *Hebrews*, being the Scribe of God, is fitter to be mentioned for Honour to other Law-givers, than to be rank'd among them. *Minos*, *Lycurgus*, and *Solon*, are Examples for the Themes of Grammar-Scholars. For ancient Perſonages and Characters, as Times go now, become Children again; tho the Parable of *Pindar* is true, that the *beſt of things is Water:* for common and trivial Things are the beſt, and are rather deſpiſed thro Pride, becauſe they are vulgar, than for any juſt Cauſe. Certainly, the Laws of thoſe three Legiſlators had great Prerogatives: *firſt*, the Prerogative of Fame; becauſe they were a Pattern among the *Grecians*; *ſecondly*, that of laſting; for they continued longeſt without Alteration; and *thirdly*, that of a Spirit of Revival, to be often oppreſſed, and often reſtored.

The Kings of Rome.

5. Among the ſeven Kings of *Rome*, four were Law-givers: for it is juſtly obſerved, that never State was ſo well ſwaddled in its Infancy, as the *Roman*, by virtue of their firſt Kings; which was a principal Cauſe of the wonderful Growth it afterwards received.

The Decemvirs.

6. The *Decemvir*'s Laws were Laws upon Laws, and not Originals; for they grafted Laws of *Greece* upon a *Roman* Stock of Laws and Cuſtoms; but ſuch was their Succeſs, that the *twelve Tables* they compiled, were the main Body of the Laws, which framed and wielded the great Body of that State. Theſe laſted long, with ſome Supplementals, and the *Pretorian* Edicts *in Albo*; which were, in reſpect of Laws, as Writing-Tables in reſpect of Braſs; the one to be put in and out, whilſt the other is permanent. *Lucius Cornelius Sylla* reformed the Laws of *Rome*: for he had three Singularities, which never Tyrant had beſides; *viz.* (1.) that he was a Lawgiver; (2.) that he ſided with the Nobility; and, (3.) that he turned private Man, not thro Fear, but Confidence.

Cæſar.

7. *Cæſar*, long after, deſired to imitate him only in the firſt; for otherwiſe he relied upon new Men; and for reſigning his Power, *Seneca* deſcribes him right: *Cæſar ſoon ſheathed his Sword, but never laid it aſide*[d]. And himſelf took it upon him, ſaying in Scorn of *Sylla*'s Reſignation; *Sylla knew no Letters, he could not dictate*[e]. But for the Part of a Law-giver,

Cicero

[d] *Cæſar Gladium citò condidit, nunquam poſuit.*
[e] *Sylla neſcivit Literas, dictare non potuit.*

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Cicero gives him the Attribute; *If you had ask'd* Cæsar *what he did in the Gown, he would have answered, that he made many excellent Laws* [f]. His Nephew *Augustus* trod the same Steps, but with deeper Print, because of his long and peaceful Reign; whereof one of the Poets of his Age says; *That when he had given Peace to the Earth, he bent his Mind to the Consideration of Rights and Privileges, and the enacting of just Laws* [g].

8. From that time there was such a Race of Wit and Authority, between the Commentaries and Decisions of the Lawyers, and the Edicts of the Emperors, that both Laws and Lawyers were out of Breath. Whereupon *Justinian* in the End recompiled the whole, and made a Body of such Laws as might be wielded; which himself gloriously and truly calls, the *raising of a Temple sacred to Justice*; built indeed on the former Ruins of Books, as Materials, and some new Constitutions of his own. Justinian.

9. In *Athens* they had *Sexviri*, as *Æschines* observes, or *Standing-Commissioners*, who watched to see what Laws grew improper for the Times, and what new Law in any Branch crossed a former; and so *ex officio* proposed their Repeal. The Sexviri of Athens.

10. King *Edgar* collected the Laws of this Kingdom; and gave them the Strength of a Faggot bound; whereas they formerly were dispersed. And that was more Glory to him, than his sailing about this Island, with a potent Fleet: which was, as the Scripture says; *the way of a Ship in the Sea*; it vanished, but this lasts. King Edgar.

11. *Alphonso* the Wise, the Ninth of that Name, King of *Castile*, compiled the *Digest* of the Laws of *Spain*, entitled the *Siete Partidas*; an excellent Work, which he finished in seven Years. And as *Tacitus* well observes, that the Capitol, tho built in the Beginnings of *Rome*, was yet fit for the great Monarchy that came after; so that Building of Laws suffices for the Greatness of the *Spanish* Empire, which has since ensued. Alphonso of Castile.

12. *Lewis* XI. had it at heart to have made one constant Law of *France*, extracted out of the Civil *Roman* Law, and the Customs of the Provinces, which are various, and the King's *Edicts*, which, with the *French*, are Statutes. Surely he might have done well, if, as he brought the Crown from *Page*, which is his own Expression, so he had brought his People from *Lackey*; that they might not run up and down for their Laws to the *Civil Law*, the Ordinances, the Customs, the Discretions of Courts, and the Discourses of Philosophers, as they do. Lewis XI. of France.

13. King *Henry* VIII. in the twenty-seventh Year of his Reign, was authorized by Parliament, to nominate thirty-two Commissioners, part ecclesiastical, and part temporal, to purge the *Canon Law*, and make it agreeable to the Law of God, and the Law of the Land; but it took no effect: for the Acts of that King were commonly rather Proffers and Rumours, than well grounded, or well pursued. But I may err in producing so Henry VIII. of England.

[f] *Cæsar, si ab eo quæreretur, quid egisset in Togâ, Leges respondisset multas & præclaras tuliſſe.*

[g] *Pace data Terris, animum ad civilia vertit*
Jura suum; Legesque tulit justissimus author.

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ſo many Examples. For as *Cicero* ſaid to *Cæſar*, ſo may I ſay to your Majeſty, *Nil vulgare te dignum videri poſſit* [h]. And indeed, the thing well underſtood, is far from vulgar: for the Laws of moſt Kingdoms and States, have been like Buildings of many Pieces; and patch'd up from time to time, according to Occaſions, without Frame or Model.

The Laws of England *characterized.*

14. For the Laws of *England*; to ſpeak my Opinion, without Partiality either to my Profeſſion or Country; as to the Matter and Nature of them, I hold them wiſe, juſt, and moderate: they give to God; they give to *Cæſar*; they give to the Subject what appertains. True, they are as mix'd as our Language; compounded of *Britiſh*, *Roman*, *Saxon*, *Daniſh*, and *Norman* Cuſtoms: And ſurely as our Language is thereby ſo much the richer; our Laws are likewiſe by that Mixture the more compleat.

Require Amendment.

15. Nor does this attribute leſs to them, than thoſe who would have them to have ſtood the ſame in all Mutations: for no Tree is ſo good firſt ſet, as by tranſplanting and grafting. But tho the *Matter* of them be excellent, they certainly require Amendment in point of *Form*; which to reduce and perfect, I hold as one of the greateſt Dowries that can be conferred upon this Kingdom.

The Work recommended to King James, *on account of his Iſſue.*

16. This Work, as for its Excellency, it is worthy of your Majeſty's Act and Times; ſo it has ſome Circumſtance of Propriety agreeable to your Perſon. God has bleſſed your Majeſty with Poſterity; and I am not of the Opinion, that childleſs Kings are fitteſt to ſupply Perpetuity of Generations, by Perpetuity of noble Acts; but contrarywiſe, that they who leave Poſterity, are the more intereſted in the Care of future Times; that as well their Offspring, as their People, may participate of their Merit.

And learned Times.

17. Your Majeſty is a great Maſter in Juſtice and Judicature; and it were a Pity the Fruit of that your Virtue ſhould not be tranſmitted to ſucceeding Ages. Your Majeſty alſo reigns in learned Times; the more, no doubt, in regard of your own Perfection in Learning; and by your Patronage thereof. And it has been the Misfortune of Works of this Nature, that the leſs learned Times have wrought upon the more learned; which now will not be the Caſe.

The Author's Propoſal to aſſiſt therein.

18. As for myſelf, the Law was my Profeſſion; to which I am a Debtor: ſome little Helps I have of other Arts; which may give Form to Matter. And I have now, by God's merciful Chaſtizement, and by his ſpecial Providence, Time and Leiſure, to put my Talent, or half Talent, or what it is, to ſuch Exchanges, as may perhaps exceed the Intereſt of an active Life. Therefore, as in the beginning of my Troubles, I offered your Majeſty to take pains in the Hiſtory of *England*; and in compiling a *Method* and *Digeſt* of your Laws; I have, in ſome meaſure, performed the firſt [i], which reſted only upon myſelf; and now, in all Humility, renew the Offer of this latter, which will require Help and Aſſiſtance; if it ſhall ſtand with your Majeſty's good Pleaſure to employ my Service therein.

19. To

[h] That nothing vulgar ſeems worthy of you.

[i] As having now publiſhed his Hiſtory of King *Henry* VII.

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19. To give your Majesty some View of the Work, as I propose it, permit me to say somewhat of its *Dignity*, its *Safety* and *Convenience*; and lastly, to shew how it may be effected: which will best demonstrate it to be no vast or speculative Thing, but real and feasible. *A View of the Thing proposed.*

20. And first, I have nothing to say by way of taxing the Laws; but speak only by way of *perfecting them*; which is easiest in the best things: for that which is greatly amiss, hardly receives Amendment; but that which has already, to that more may be given. What I shall propose being not as to the Matter of Laws; but only as to the Manner of their Registring, Expression, and Tradition; so as to give them rather Light than any new Nature. Thus then, for the *Dignity* of the Work, I scarce know where to find the like; for surely that Scale, and those Degrees of sovereign Honour, are true and rightly marshalled: First, the Founders of States; then Law-givers; then Deliverers after long Calamities; then the Fathers of their Countries, or just and prudent Princes; and lastly, Conquerors: an Honour not to be received among the rest; except where there is more Addition of Country and Territory to a better Government, than that of the Conquered. Of these, in my Judgment, your Majesty may, with more Truth than Flattery, be entitled to the first; because of your uniting *Britain*, and planting *Ireland*; both which savour of the Founder. What I now propose, may adopt you also to the second. *Law-givers* have been called *Principes perpetui*; as being, after their Decease, still Kings and Rulers, in their Laws. But this Work shining so in itself, needs no Taper. *Its Dignity.*

21. For the *Safety* and *Convenience* thereof; 'tis proper to consider, and answer those Objections, or Scruples, that may arise, or be made against it. The first may be this. *Its Safety and Convenience.*

Objection I.

22. *That it is a needless thing; that the Law, as it now stands, is in a good State, comparable to any foreign Law; and that it is not possible for the Wit of Man, in respect of the Frailty thereof, to provide against the Incertainties and Evasions, or Omissions, of Law.* Objections. *That the Work is needless.*

Answer.

23. For the Comparison with foreign Laws; it is in vain to speak of it: for Men will never agree about it. Our Lawyers will be for our municipal Laws; Civilians, Scholars, and Travellers, will be of the other Opinion. *The Law of* England *thought better than foreign Laws.*

24. But certain it is, that our Laws, as they now stand, are subject to great Incertainties, and Variety of Opinion, Delays and Evasions: whence follows, (1.) great Multiplicity and Length of Suits. (2.) The contentious Person is armed; and the honest Subject wearied and oppressed. (3.) The Judge is more absolute; and in doubtful Cases has a greater Scope and Liberty. (4.) The Chancery-Courts are more filled; the Remedy of Law being often obscure and doubtful. (5.) The ignorant Lawyer skreens *Inconvenience of the Law of* England.

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his Ignorance of Law, in frequent and numerous Doubts: and, (6.) Mens Aſſurances of their Lands and Eſtates by Patents, Deeds, and Wills, are hollow, and often ſubject to Queſtion; with many the like Inconveniencies.

To know when the Defect is in the Law.

25. And as all Laws do, more or leſs, participate of Incertainties, it is a good Rule and Direction, to mark whether the Doubts that ariſe are only in Caſes of ordinary Experience, or in ſuch as happen not every Day: if in the firſt, impute it to Frailty of Man's Foreſight, that cannot reach by Law to all Caſes; but if in the latter, be aſſured there is a Fault in the Law. Of this I ſay no more, but that (to give every Man his Due) had it not been for Sir *Edward Cook*'s *Reports* (which, tho they may have Errors, and ſome peremptory and extrajudicial Reſolutions, more than are warranted; yet they contain infinite good Deciſions, and Rulings over of Caſes) the Law by this time had been almoſt like a Ship without Ballaſt; for the Caſes of modern Experience are fled from thoſe that are adjudged, and ruled in former time.

Cook's Reports

Penal Laws.

26. But the Neceſſity of this Work is yet greater in the *Statute Law*. For firſt, there are as many enſnaring *Penal Laws*, which lie upon the Subject: and if in bad Times they ſhould be awaked, and put in Execution, would grind them to Powder. A learned Civilian interprets the Curſe of the Prophet, *It ſhall rain Snares upon them*, of a Multitude of *Penal Laws*; which are worſe than Showers of Hail, or Tempeſts upon Cattle; for they fall upon Men. There are ſome *Penal Laws* fit to be retained; but their Penalty is too great: for it is ever a Rule, that any over-great Penalty, beſides the Acerbity of it, deadens the Execution of the Law. There is a farther Inconvenience of *obſolete Penal Laws*; for this brings a Gangrene, Neglect, and Habit of Diſobedience upon other wholſome Laws, that are fit to be continued in Practice, and Execution: ſo that our Laws endure the Torment of *Mezentius*; *The Living die in the Arms of the Dead.*

Accumulation of Statutes.

27. Laſtly, there is ſuch an Accumulation of Statutes concerning one Matter, and they ſo croſs and intricate, that the Certainty of Law is loſt in the Heap.

Objection II.

28. *That it is a great Innovation; and Innovations are dangerous, beyond Foreſight.*

Anſwer.

The Charge of Innovation anſwered from Reaſon,

29. All Purgings and Medicines, either in the civil or natural Body, are *Innovations:* whence this Argument is a Common-place againſt all noble Reformations. But the Truth is, that this Work ought not to be termed, or held, an Innovation in the ſuſpected Senſe. For thoſe are the Innovations objected and ſpoken againſt, that concern the Conſciences, Eſtates, and Fortunes of particular Perſons: but this of general Ordinance, pricks not Particulars, but paſſes ſilently. Beſides, 'tis on the favourable Part; for it

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it eaſes and preſſes not: and laſtly, 'tis rather Matter of Order and Explanation, than of Alteration. Neither is this without Precedent in former Governments. For, as was above obſerved, the *Romans*, by their *Decemvirs*, made their *twelve Tables*; but that indeed was only a new enacting or conſtituting of Laws, not a regiſtring or recompiling: and they were made out of the Laws of the *Grecians*, not out of their own Cuſtoms. In *Athens* they had *Sexviri*, who were Standing Commiſſioners to watch what Laws became improper for the time; and what new Law in any reſpect croſſed a former; and ſo motion'd their Repeals. *Lewis* XI. of *France* intended to have made one perfect and uniform Law, out of the *Roman* Law, and the provincial Cuſtoms of *France*. *Juſtinian*, by Commiſſions directed to diverſe Perſons, learned in the Laws, reduced the *Roman* Laws from Vaſtneſs of Volume and a Labyrinth of Incertainties, to that Courſe of *Civil Law*, which is now in uſe. And at home, King *Henry* VIII. in the twenty-ſeventh Year of his Reign, was authorized by Parliament to nominate thirty-two Commiſſioners; part eccleſiaſtical, part temporal, to purge the *Canon Law*, and make it agreeable to the Law of God, and the Law of the Land: and the ſame was revived in the fourth Year of *Edward* VI. tho neither took effect. And the *Statutes* of King *Edward* I. were fundamental. *and from Precedents.*

Objection III.

30. *In thus purging the Courſe of Common Laws, and Statutes, much Good may be taken away.* That much Good may be taken away.

Anſwer.

31. In all Purging, ſome good Humours may be diſcharged; but that is largely recompenſed by lightening the Body of much bad.

Objection IV.

32. *Labour were better beſtowed, in bringing the Common Laws of* England *to a Text Law, as the Statutes are; and ſetting both of them down in Method, and by Titles.* Whether better to form a *Text Law.*

Anſwer.

33. 'Tis too long to debate, whether *Lex Scripta, aut non Scripta*, a *Text Law*, or *Cuſtoms* well regiſtred, with received and approved Grounds and Maxims, and judicial Acts and Reſolutions, from time to time duly enter'd and reported, be the better Form of declaring and authorizing. It was the principal Oracle of *Lycurgus*, that none of his Laws ſhould be written. Cuſtoms are Laws written in living Tables; and ſome Traditions the Church does not diſauthorize. In all Sciences, they are the ſoundeſt that keep cloſe to Particulars; and I am ſure there are more Doubts ariſe upon our Statutes, which are a *Text Law*; than upon the *Common Law*, which is no *Text Law*: but however the Queſtion be determined, I dare not adviſe caſting the Law into a new Mould. The Work I propoſe tends but to

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prune and graft the Law; and not to plough up and plant it again: for such a Remove, I should hold indeed for a dangerous Innovation.

Objection V.

That it will cause the Law to be learnt anew.

34. *It will turn the Judges, Counsellors and Students of Law, to School again; and make them at a loss what to hold and advise for Law: and it will impose a new Charge upon all Lawyers, to furnish themselves with new Books of Law.*

Answer.

Answered.

35. The former, 'tis true, would follow, if the Law were new moulded into a Text Law; for then Men must begin anew; and this is one of the Reasons for which I disallow that Course. But in the way I now propose, the entire Body and Substance of the Law will remain, only discharged of idle and unprofitable, or hurtful Matter; and illustrated by Order, and other Helps, towards the better understanding of it, and forming Judgment thereon.

36. For the latter part of the new Charge; 'tis not worth the speaking of, in a Matter of so high Importance: it might have been used of the new Translation of the Bible, and the like Works. Books must follow Sciences, and not Sciences follow Books.

How the Work is to be effected.

37. The Work itself, or the Recompilement of the Laws of *England*, is to be effected in this manner. It consists of two Parts; (1.) the *Digest*, or recompiling of the COMMON LAW; and, (2.) that of the STATUTES. In the first of these, three things are required; (1.) the *compiling of* a Book *de Antiquitatibus Juris*. (2.) The *reducing or perfecting of the Course or Corps of the Common Laws:* and, (3.) *The composing of certain introductory and auxiliary Books, directing the Study of the Laws.*

Viz. *By compiling a Book concerning the Antiquities of the Law.*

38. I. For the *first* of these; all ancient Records in your Majesty's *Tower*, or elsewhere, containing Acts of Parliament, Lords Patents, Commissions, Judgments, and the like, are to be searched, perused, and weighed: and out of them are to be selected those that are of most worth and weight; and in Order of Time, not of Titles, (for the greater Conformity with the *Year-Books*) to be set down and registred, rarely in *hæc verba*; but summed with Judgment: not omitting any material part. These are to be used for reverend Precedents; but not for binding Authorities.

A Course of Law in the order of Time.

39. II. For the *second*, which is the main, there is to be made a perfect *Course of* the *Law* in *serie Temporis*, or Year-Books, as we call them, from *Edward* I. to this Day. In the compiling of this *Course of Law*, or Year-Books, the following Points are to be observed. *First*, all Cases, which at this Day are clearly no Law, but always ruled to the contrary, should be left out; as they do but swell the Volumes, and season the Wits of Students in a contrary Sense of Law. So likewise all Cases, wherein that is solemnly and long debated, whereof there is now no question at all, are to be enter'd as Judgments only, and Resolutions; but without

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without the Arguments, which are now become frivolous. Yet, for the Obſervation of the deeper ſort of Lawyers; that they may ſee how the Law has alter'd; I adviſe, that upon the firſt, in time, of thoſe obſolete Caſes, there be a *Memorandum* ſet, denoting that at this time the Law was thus taken, until ſuch a time, *&c.*

40. *Secondly*, *Homonymiæ*, as *Juſtinian* calls them, that is Caſes merely of Iteration and Repetition, are to be purged away; and the Caſes of Identity, which are beſt reported and argued, to be retained inſtead of the reſt: the Judgments nevertheleſs to be ſet down, every one in time as they are; and with a Quotation or Reference to the Caſe, where the Point is argued at large: but if the Caſe conſiſt part of Repetition, part of new Matter, the Repetition is only to be omitted. Homonymiæ *to be left out.*

41. *Thirdly*, as to the *Antinomiæ*, or Caſes judged to the contrary; it were too great a Truſt to refer the Deciſion of the Law, either way, to the Judgment of the Compilers of this Work; except there be a current Stream of Judgments of later times: and then I reckon, the contrary Caſes among obſolete Caſes, of which I ſpoke before. Nevertheleſs, ſuch Caſes of Contradiction ſhould be eſpecially noted and collected; to the end thoſe Doubts, that have been ſo long militant, may either by aſſembling all the Judges in the Exchequer-Chamber, or by Parliament, be reduced to a Certainty. For to do it, by bringing them in queſtion under feign'd Parties, is to be diſliked. *Nil habeat Forum ex Scenâ* [k]. Antinomiæ, *how to be treated.*

42. *Fourthly*, All idle Queries, which are but Seminaries of Doubts and Incertainties, ſhould be omitted; and no Queries ſet down, but of great Doubts, well debated and left undecided, on account of their Difficulty: but all doubting or upſtarting Queries, tho touched in Argument, for Explanation, yet were better to die than be preſerv'd in the Books. *Idle Queries to be avoided.*

43. Laſtly, Caſes reported with too great Prolixity, ſhould be drawn into a more compendious *Report*; not in the Nature of an Abridgment; but Tautologies and Impertinencies to be cut off. As for Miſprinting, and inſenſible Reporting, which often confound the Students; thoſe will be amended occaſionally. But principally, if there be any thing in the *Report* which is not well warranted by the Record; that alſo is to be rectified. *Tedious Caſes to be ſhortened.*

44. The Courſe being thus compiled, it remains only for your Majeſty to appoint ſome grave and ſound Lawyers, with an honourable Stipend, to be *Reporters* [l], for the time to come: and then this is ſettled for all times. *Reporters to be appointed.*

45. III. The *Auxiliary Books* conducing to the Study and Knowledge of the Law, are three; *viz.* (1.) Inſtitutions: (2.) a Treatiſe *De Regulis Juris:* and (3.) a better Book, *De Verborum Significationibus*, or Terms of the Law. *Auxiliary Books.*

46. (1.) For the *Inſtitutions*; there are Books of Introductions of good Worth, eſpecially *Littleton* and *Fitzherbert*'s *Natura Brevium:* but they are *Inſtitutions.*

no

[k] Let not the *Courts of Juſtice* copy the *Stage.*

[l] The Author here adds a Note; *viz.* "This Conſtitution of Reporters I obtained "of the King, after I was Chancellor; and there are two appointed, each with a Sti-"pend of 100*l.* a Year."

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no way in the Nature of an Inſtitution; the Office whereof is to be a Key and general Preparation to the reading of the *Courſe*. And principally it ought to have two Properties; the one, that of a perſpicuous and clear Method; and the other that of an univerſal Latitude or Comprehenſion: whence the Students may have a little Præ-notion of every thing; like a Model towards a great Building.

A Treatiſe of Maxims and Rules of Law.

47. (2.) For the Treatiſe *De Regulis Juris*, I hold it of all things the moſt important to the Health, and good Inſtitutions of any Laws: it is indeed like the Ballaſt of a Ship, to keep all upright and ſtable. But I have ſeen little in this kind, either in our own, or other Laws, that ſatisfies me. The naked Rule or *Maxim*, has not the Effect: it muſt be made uſeful by good Differences, Ampliations, and Limitations, warranted by good Authorities; and this not by raiſing up of Quotations and References, but by Diſcourſe and Deducement in a juſt Treatiſe. In this I have laboured myſelf; and will go on with it, if God and your Majeſty will give me leave [m]. And I aſſure your Majeſty, I have good Hopes, that when Sir *Edward Cook*'s *Reports*, and my Rules and Deciſions, ſhall come to Poſterity; there will be, (whatever is now thought,) Queſtion, who was the greater Lawyer.

Ibid.

Law-Dictionary.

48. (3.) For the *Books* of the *Terms of Law*; there is a poor one: but I wiſh for a better, wherein ſhould be compriſed not only the Expoſition of the Terms of Law, but of the Words of all ancient Records and Precedents.

Abridgements.

49. As for *Abridgements*, I could wiſh, if it were poſſible, that none might uſe them, but ſuch as had read the *Courſe* firſt; that they might ſerve for Repertories to learned Lawyers; and not to make a Lawyer in haſte: but ſince that cannot be, I wiſh there were a good *Abridgment* compoſed of the two that are extant, and in better Order. And ſo much for the Common Law.

The Statute-Law, *how to be recompiled.*

The Statutes concerning Caſes vaniſhed to be diſcharged.

50. IV. The Reforming and Recompiling of the *Statute Law* conſiſts of four Parts. (1.) The *firſt* is, to diſcharge the Books of thoſe Statutes, where the Caſe, by Alteration of time, is vaniſhed; as *Lombards*, *Jews*, *Gaul*'s Half-pence, *&c.* Theſe may yet remain in the Libraries for Antiquities; but ſhould not be reprinted. The like I propoſe of Statutes long ſince expired, and clearly repealed; for if the Repeal be doubtful, it muſt be ſo propounded to the Parliament.

The uſeleſs and enſnaring ones to be repealed.

51. (2.) The *next* is, to repeal all Statutes, which are ſleeping and not of uſe; but yet enſnaring and in force. And here it will perhaps be ſometimes

[m] The Author publiſhed a Specimen of a Treatiſe of this kind, and dedicated it to Queen *Elizabeth*; with a Preface containing part of the Scheme, here laid down, for the Amendment and Recompiling of the Laws of *England*. It is entitled, *A Collection of ſome principal Rules and Maxims of the Common Law; with their Latitude and Extent.* This Piece conſiſts of twenty-five ſhort *Rules*, or *Maxims*, of Law; explained, exemplified, and applied, in the Language peculiar to the *Law*; ſo as deſignedly to exclude all Readers, but thoſe of the Profeſſion. The Author publiſhed only theſe twenty-five firſt, as a Taſte; deſigning to have followed them with a much larger Number; having, as he tells us, collected three hundred for the purpoſe: but the reſt never appeared.

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times requiſite to ſubſtitute a more reaſonable Law inſtead of them, agreeble to the time; in others a ſimple Repeal may ſuffice.

52. (3.) The *third* is, that the Grievouſneſs of the Penalty in many Statutes be mitigated; tho the Ordinances ſtand. *The Penalties of ſome to be mitigated.*

53. (4.) The *laſt* is, the reducing of concurrent Statutes, heaped one upon another, to a ſingle, clear, and uniform Law. Towards this there has been already, upon my Motion, and your Majeſty's Direction, a great deal of good Pains taken; my Lord *Hobart*, myſelf, Sergeant *Finch*, Mr. *Heneage Finch*, Mr. *Noye*, Mr. *Hackwell*, and others, whoſe Labours being of a great Bulk, 'tis not fit now to trouble your Majeſty with any farther Particulars therein; only by this, you may perceive the Work is already advanced. *Concurrent Statutes to be reduced.*

54. But becauſe this part, which concerns the *Statute Laws*, muſt of Neceſſity come to Parliament; and the Houſes will beſt like what themſelves guide, and the Perſons themſelves employ; the way were to imitate the Precedent of the Commiſſioners for the Canon Laws in 27 *Hen.* VIII. and 4 *Edw.* VI. and the Commiſſioners for the Union of the two Realms, *primo* of your Majeſty; and ſo to have the Commiſſioners named by both Houſes; yet not with a precedent Power to conclude, but only to prepare and propound to Parliament. *The whole to be a Parliamentary Act.*

55. This is the beſt way, I conceive, of accompliſhing ſo excellent a Work; of Honour to your Majeſty's Times, and of Good to all Times: which I ſubmit to your Majeſty's better Judgment [n].

[n] For the Reaſons why no greater Progreſs was made in this Undertaking, ſee the Author's Letter to Biſhop *Andrews*; *Supplem.* V. *Sect.* II. *ad finem.* See alſo, the *De Augment. Scientiar. pag.* 242, *&c.*

SUP-

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SUPPLEMENT XV.

A

HISTORY

OF THE

NATURE, USE,

AND

PROCEEDINGS,

OF THE

LAWS of ENGLAND.

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PREFACE.

THE following Piece is a familiar Account of the Nature, Uſe, and Proceedings of many of the Laws of England. *It ſeems chiefly intended for the Information of ſuch as do not profeſs the Law; or make that their particular Study. 'Tis no finiſhed Work; nor continued thro all the Branches of the Law. The Author was diſcouraged from proſecuting the great Deſign he had formed of Digeſting, Amending, and Reducing the Law; by finding it an Undertaking that required the Aſſiſtance of more Hands than his own. And, as the Body of the Laws of* England, *has rather received Additions and Explanations, than Alterations, in later Times; the following* Hiſtory *will not be found to have out-liv'd its Uſe: for it contains Accounts of numerous Laws, not only at preſent in force; but likely to continue ſo for Ages.*

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A HISTORY OF THE NATURE, USE, &c.

SECT. I.

The PROCEDURE *of the* LAW *in* MATTER *of the* PEACE.

1. THE *Use of the Law* consists principally in three Things; *viz.* (1.) The securing Mens Persons from Death and Violence. (2.) The disposing of the Property of their Goods and Lands. And, (3.) The Preservation of their Names, from Shame and Infamy. *Use of the Law, wherein it consists.*

2. (1.) For the *Safety of Mens Persons*; the *Law* provides that any Man standing in Fear of another, may take his Oath, before a *Justice* of Peace, that he stands in fear of his Life; and the Justice shall compel the other to be bound, with Sureties, to keep the Peace. *Surety to keep the Peace.*

3. If any Man beat, wound, or maim another; or give false, scandalous Words, that may touch his Credit; the Law grants thereupon an *Action of the Case*, for the Slander of his good Name; and an Action of Battery; or an Appeal of Maim, by which Recompence shall be recovered, to the Value of the Hurt, Damage, or Danger. *Action for Slander, Battery, &c.*

4. If any Man kill another, with Malice, the Law gives an Appeal to the Wife of the Deceased, if he had any; or to the next of kin, that is Heir in Default of a Wife; by which Appeal the Defendant convicted is to suffer Death, and to lose all his Lands and Goods: but if the Wife or Heir *Appeal of Murder given to the next of kin.*

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Heir will not ſue, or be compounded withal; yet the King is to puniſh the Offence by Indictment or Preſentment of a lawful Inqueſt and Trial, before competent Judges; whereupon the Perſon being found guilty, he is to ſuffer Death, and to loſe his Lands and Goods.

Man-ſlaughter, when a Forfeiture of Goods, and when not.

5. If one Man kill another upon a ſudden Quarrel, this is *Man-Slaughter*; for which the Offender muſt die, except he can read; and if he can read, yet he muſt loſe his Goods, but not Lands[o].

6. If a Man kill another in his own Defence, he ſhall not loſe his Life, nor his Lands; but his Goods; except the Perſon ſlain was the Aſſailant, to kill, rob, or diſturb the other by the High-way ſide, or in his own Houſe; and then he ſhall loſe nothing.

Felo de ſe.

7. And if a Man kill himſelf, all his Goods and Chattels are forfeited; but not Lands.

Felony by Miſchance.

8. If a Man kill another by Misfortune, as by ſhooting an Arrow at a Butt or Mark, caſting a Stone over a Houſe, or the like; this is the Loſs of Goods and Chattels, but not of Lands, nor Life.

Deodand.

9. If a Horſe, a Cart, a Beaſt, or any other thing, kill a Man; the Horſe, Beaſt, or other thing is forfeited to the Crown, and is call'd a *Deodand*; and uſually granted and allowed by the King to the Biſhop Almoner, as Goods are of thoſe that kill themſelves.

Maiming.

10. The cutting out of a Man's Tongue, or putting out his Eyes maliciouſly, is *Felony*; for which the Offender is to ſuffer Death, and loſe his Lands and Goods.

Puniſhment for Example.

11. But as all Puniſhment is for Example, 'tis proper to ſee the Means whereby Offenders are brought to Puniſhment. And firſt for Matter of the Peace, the ancient Laws of *England*, planted here by the Conqueror, were, that there ſhould be Officers of two ſorts in all Parts of this Kingdom, to preſerve the Peace; *viz.* (1.) *Conſtabularij Pacis*; and (2.) *Conſervatores Pacis.*

The Office of Conſtables of the Peace.

12. The Office of the *Conſtable* was, to arreſt the Parties he had ſeen breaking the Peace, or in Fury ready to break the Peace; or was truly inform'd by others, or by their own Confeſſion, that they had newly broken the Peace; which Perſons he might impriſon in the Stocks, or in his own Houſe, as his or their Quality required; till they had become bound with Sureties to keep the Peace: which Obligation from thenceforth was to be ſealed and delivered to the *Conſtable*, for the Uſe of the King. And the Conſtable was to ſend to the King's Exchequer or Chancery, from whence Proceſs ſhould be awarded, to levy the Debt; if the Peace were broken.

13. But the *Conſtable* could not arreſt any Perſon, or make any one put in Bond, upon Complaint of threatening only; except they had ſeen them breaking the Peace, or had come newly after the Peace was broken. Theſe *Conſtables* alſo were to keep watch about the Town, for apprehending Rogues, Vagabonds, Night-walkers, Eves-droppers, Scouts, and ſuch as go

[o] See hereafter, *Sect.* II. §. 30.

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go arm'd. They ought likewiſe to raiſe *Hue and Cry* againſt Murderers, Man-ſlayers, Thieves, and Robbers.

14. Of this *Office of Conſtable* there were *High-Conſtables*, two of every Hundred; Petty Conſtables, one in every Village: they were in ancient Time all appointed by the Sheriff of the Shire yearly, in his Court, call'd the *Sheriff's Tourne*; and there they received their Oath. But at this Day they are appointed, either in the Law-day of that Precinct, wherein they ſerve, or elſe by the *High-Conſtable* in the Seſſions of the Peace. *High-Conſtables for every Hundred, and a Petty-Conſtable for every Village.*

15. The Authority of Conſtables was granted upon the ancient Laws and Cuſtoms of this Kingdom, practiſed long before the Conqueſt; and intended and inſtituted for the Conſervation of the Peace, and repreſſing all manner of Diſturbance and Hurt of the People; and that as well by way of Prevention as Puniſhment: but yet ſo, that they have no judicial Power, to hear and determine any Cauſe; but only a miniſterial Power. *Authority of Conſtables.*

16. The Origin of the Office of High-Conſtable is more obſcure; for tho the High-Conſtable's Authority has the more ample Circuit, he being over the Hundred, and the Petty-Conſtable over the Village; yet I do not find that the Petty-Conſtable is ſubordinate to the High-Conſtable; or to be ordered or commanded by him: therefore I doubt the High-Conſtable was not *ab origine*; but that when the Buſineſs of the Country increaſed, the Authority of the Juſtices of Peace was enlarged by diverſe Statutes; then, for Conveniency ſake, the Office of High-Conſtable grew in Uſe, for the receiving the Commands and Precepts from the Juſtices of Peace; and diſtributing them to the Petty-Conſtables. And in token of this, the Election of High-Conſtables, in moſt parts of the Kingdom, is by the Appointment of the Juſtices of Peace; whereas the Election of the Petty-Conſtable is by the People. *Origin of High-Conſtables.*

17. But there are two things to which the Office of Conſtable has ſpecial Relation, and which of Neceſſity, or at leaſt by a kind of Congruity, muſt precede the Juriſdiction of that Office; *viz.* (1.) The Diviſion of the Territory, or groſs of the Shires into Hundreds, Villages, and Towns; for the High-Conſtable is Officer over the Hundred; and the Petty-Conſtable is over the Town or Village. (2.) The Court-Leet, to which the Conſtable is a proper Attendant and Miniſter; for there the Conſtables are choſen by the Jury; there they are ſworn; and there that part of their Office, which concerns Information, is principally to be perform'd: for the Jury is to preſent Offences; and Offenders are chiefly to take light from the Conſtables of all Matters of Diſturbance and Nuſance of the People, which they, in reſpect of their Office, are preſumed to have beſt, and moſt particular Knowledge of. *

18. The *firſt* End of the Inſtitution of the Court-Leet, is, to take the ancient Oath of Allegiance of all Males above the Age of twelve Years. The *ſecond*, to enquire of all Offences againſt the Peace; and for thoſe that are againſt the Crown and Peace both, to enquire of only, and to certify to the Juſtices of Goal-Delivery; but thoſe that are againſt the Peace ſimply, they are to enquire and puniſh. *Office of the Court-Leet.*

The

* See hereafter, *Sect.* IX.

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19. The *third* is, to enquire of, puniſh, and remove all publick Nuſances and Grievances, concerning Infection of Air, Corruption of Victuals, Eaſe of Chaffer, and Contract of all other Things that may hurt or grieve the People in general, in their Health, Quiet and Welfare.

20. And to theſe three *Ends*, as Matters of Policy ſubordinate, the Court-Leet has Power to call upon the Pledges that are taken for the good Behaviour of the Reſiants, that are not Tenants; and to enquire of all Defaults of Officers, as Conſtables, Ale-Taſters, and the like: and likewiſe for the Choice of Conſtables, as aforeſaid.

Juriſdiction of Court-Leets.

21. The Juriſdiction of theſe Leets ever remains in the King, and is in that Reſpect exerciſed by the Sheriff in his *Tourne*; which is the grand Leet, granted over to the Subjects; but 'tis ſtill the King's Court.

Election of Conſtables.

22. The Election of the *Petty-Conſtable* is, at the Court-Leet by the Inqueſt that makes the Preſentments; the Election of the Head-Conſtables is by the Juſtices of Peace at their Quarter-Seſſions. The Office is annual, except they be removed. They are now Men of inferior, yea, of baſe Condition; which is a mere Abuſe or Degenerating from the firſt Inſtitution: for the Petty-Conſtables in Towns ought to be of the better ſort of Reſiants in the ſaid Town; ſave that they ſhould not be aged or ſickly; but Men of able Bodies, in reſpect of the keeping Watch and Toil of their Place; neither ought they to be in any Man's Livery: and the High-Conſtables ought to be of the ableſt ſort of Freeholders, and of the ſubſtantialleſt ſort of Yeomen, next to the Degree of Gentlemen; but they ought to be ſuch as are not incumbred with any other Office, as Mayor of a Town, Under-Sheriff, Bailiff, *&c.*

Are to act Gratis.

23. They have no Allowance; but are bound by Duty to perform their Offices *Gratis:* which may the rather be endured, becauſe it is but annual; and they are not tied to keep or maintain any Servants or Under-miniſters, becauſe every one of the King's People are bound to aſſiſt them.

Are puniſhable for Refuſal.

24. Upon Complaint made of his Refuſal to any one Juſtice of Peace, the ſaid Juſtice may bind him over to the Seſſions; where if he cannot excuſe himſelf by juſt Allegation, he may be fined and impriſoned for his Contempt.

The Power of Conſtables.

25. The Authority of Conſtables, as it is ſubſtantive, and of itſelf; or ſubſtituted, and bound to the Warrants and Commands of the Juſtices of Peace; ſo again it is original, or additional: for either it was given them by the Common Law, or elſe annexed by diverſe Statutes. And as for ſubordinate Power, wherein the Conſtable is only to execute the Commands of the Juſtices of Peace; and likewiſe the additional Power, which is given by diverſe Statutes; 'tis hard to comprehend them in any Brevity: for they correſpond to the Office and Authority of the Juſtices of Peace, which are very large; and are created by the Branches of ſeveral Statutes; which are things of different Natures. But for the original and ſubſtantive Power of a Conſtable, it may be reduced to three Heads; *viz.* (1.) Matter of Peace only; (2.) Matter of Peace and the Crown; and (3.) Matter of Nuſance, Diſturbance and Diſorder; altho not accompanied with Violence and Breach of the Peace.

26. For

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26. For pacifying of Quarrels begun, the Conſtables may, upon hot Words given, or likelihood of Breach of Peace to enſue, command them, in the King's Name, to keep the Peace, and depart, and forbear: and ſo he may, where any Fray is made, part the ſame, and keep the Parties aſunder; and arreſt and commit the Breakers of the Peace, if they will not obey; and call Power to aſſiſt him for the ſame purpoſe.

27. For the Puniſhment of Breach of Peace paſt, the Law is very tender and ſparing in giving any Authority to Conſtables; becauſe they have no judicial Power: and the Uſe of the Office is rather for preventing or ſtaying Miſchief, than for puniſhing Offences; for in that part he is rather to execute the Warrants of the Juſtices; or when any ſudden Matter ariſes upon his View, or notorious Circumſtances, to apprehend Offenders, and carry them before the Juſtices of Peace; and generally to impriſon in like Caſes of Neceſſity, where the Caſe will not endure the preſent carrying of the Party before the Juſtices.

28. For Matters of the Crown, the Office of Conſtable conſiſts chiefly in theſe four Parts: (1.) Arreſt; (2.) Search; (3.) Hue and Cry; and, (4.) Seizure of Goods. All which the Conſtable may perform of his own Authority, without any Warrant of the Juſtices of Peace. *In Matters of the Crown.*

29. (1.) For, *firſt*, if any Man will lay Murder or Felony to another's Charge, or do ſuſpect him of Murder or Felony, he may declare it to the Conſtable; and the Conſtable ought, upon ſuch Declaration or Complaint, to carry him before a Juſtice: and if by common Voice or Fame any Man be ſuſpected, the Conſtable of Duty ought to arreſt him, and bring him before a Juſtice; tho there be no other Accuſation or Declaration.

30. (2.) If any Houſe be ſuſpected of receiving or harbouring any Felon; the Conſtable, upon Complaint, or common Fame, may ſearch.

31. (3.) If any one fly upon the Felony, the Conſtable ought to raiſe *Hue and Cry*; and ſearch his Goods, and keep them ſafe without impairing, and to inventory them in the Preſence of honeſt Neighbours.

32. (4.) For Matters of common Nuſance and Grievance, they are of a very variable Nature, according to the ſeveral Comforts which Man's Life and Society requires, and the Contraries which infeſt the ſame. *In Matters of Nuſance and Grievance.*

33. In all which, be it Matter of corrupting Air, Water, or Victuals, or ſtopping, ſtraitening, or endangering Paſſage; or general Deceits in Weights, Meaſures, or Sizes; or counterfeiting Wares, and things vendicable; the Office of the Conſtable is to give, as much as in him lies, Information of them, and of the Offenders in Leets, that they may be preſented: but becauſe Leets are kept only twice in the Year, and many of theſe things require preſent or ſpeedy Remedy; the Conſtable, in things of notorious and vulgar Nature, ought to forbid and repreſs them in the mean time.

34. Conſtables are for their Contempt to be fined and impriſoned by the Juſtices in their Seſſions. *Conſtables, how puniſhable.*

35. The Conſtables Oath runs thus. "You ſhall ſwear that you "ſhall well and truly ſerve the King, and the Lord of this Law-day; *The Oath of Conſtables.*

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" and you ſhall cauſe that the Peace of our Sovereign Lord the King " ſhall be well and duly kept, to your Power: and you ſhall arreſt " all thoſe that you ſee committing Riots, Debates, and Affrays, in " Breach of Peace: and you ſhall well and duly endeavour yourſelf, to " your beſt Knowledge, that the Statutes of *Winchester* for Watch, *Hue* " *and Cry*, and the Statutes made for the Puniſhment of ſturdy Beggars, " Vagabonds, Rogues, and other idle Perſons coming within your Of- " fice, be truly executed, and the Offenders puniſhed: and you ſhall en- " deavour, upon Complaint made, to apprehend Barratters and riotous " Perſons making Affrays; and likewiſe to apprehend Felons: and if any " of them make Reſiſtance with Force, and Multitude of Miſ-doers, " you ſhall make Out-cry, and purſue them till they be taken; and ſhall " look unto ſuch Perſons as uſe unlawful Games: and you ſhall have re- " gard to the Maintenance of Artillery: and you ſhall well and duly " execute all Proceſs and Precepts ſent to you from the Juſtices of " Peace of the County: and you ſhall make good and faithful Preſent- " ments of all Blood-ſheds, Out-crys, Affrays, and Reſcues made within " your Office: and you ſhall well and duly, according to your Power " and Knowledge, do that which belongs to your Office of Conſtable to " do, for this Year to come. So help, *&c.*"

The Authority of Conſtables. 36. The Authority of the two Conſtables is the ſame in ſubſtance; differing only in extent: the Petty-Conſtable ſerving only for one Town, Pariſh, or Borough; the Head-Conſtable ſerving for the whole Hundred. Neither is the Petty-Conſtable ſubordinate to the Head-Conſtable for any Command that proceeds from his own Authority; but it is uſed, that the Precepts of the Juſtices be delivered to the High-Conſtables, who being few in Number, may better attend the Juſtices; and then the Head-Conſtables, by virtue thereof, make their Precepts over to the Petty-Conſtables.

Deputy-Conſtables. 37. In Caſe of Neceſſity the Conſtable may appoint a Deputy, or in Default thereof, the Steward of the Court-Leet may; which Deputy ought to be ſworn before the ſaid Steward.

Summary of the Conſtable's Office. 38. In fine, the Office of Conſtables conſiſts wholly in theſe three things; *viz.* (1.) The Conſervation of the Peace; (2.) the ſerving of Precepts and Warrants of the Juſtices; and, (3.) their Attendance for the Execution of Statutes.

SECT.

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SECT. II.

The OFFICE *of* JUSTICES *of the* PEACE.

1. THE Sheriff's Tourne is a Court very ancient, incident to his Office. At the firſt it was erected by the Conqueror, and called the King's Bench; appointing Men ſkilled in the Law to execute Juſtice, as Subſtitutes to him, in his Name; which Men are to be called *Juſticiarij ad placita coram Rege aſſignati:* one of them being *Capitalis Juſticiarius*, call'd to his Fellows; the reſt in Number as pleaſes the King; of late but three *Juſticiarij* were held by Patent. In this Court every Man above twelve Years of Age was to take his Oath of Allegiance to the King; if he were bound, then his Lord to anſwer for him. In this Court the Conſtables were appointed, and ſworn; Breakers of the Peace puniſhed by Fine and Impriſonment; the Parties abuſed or hurt recompenſed upon Complaints of Damages; all Appeals of Murder, Maim, or Robbery, decided; Contempts againſt the Crown, publick Annoyances againſt the People, Treaſons, Felonies, and all other Matters of Wrong betwixt Part and Party for Lands and Goods. *The King's Bench firſt inſtituted, and its Juriſdiction.*

2. But the King ſeeing the Realm grow daily more and more populous, and that this one Court could not diſpatch all; firſt ordain'd that his Marſhal ſhould keep a Court, for Controverſies ariſing within the Verge, which is within twelve Miles of the chiefeſt Tunnel of the Court: which only eaſed the King's Bench, in Matter concerning Debts, Covenants, and ſuch like, of thoſe of the King's Houſhold alone; never dealing in Breaches of the Peace, or concerning the Crown by any other Perſons, or any Pleas of Lands. *Court of Marſhalſea, and its Juriſdiction.*

3. The King, for farther Eaſe, having divided this Kingdom into Counties, and committing the Charge of every County to a Lord or Earl; directed that thoſe Earls, within their Limits, ſhould look to the Matter of the Peace, take charge of the Conſtables, reform publick Annoyances, ſwear the People to the Crown, and take Pledges of the Freemen for their Allegiance; for which purpoſe the County kept a Court once a Year, called the Sheriff's Tourne; at which all the County, except Women, Clergy, Children under twelve, and not aged above ſixty, appeared to give or renew their Pledges for Allegiance. And the Court was call'd, *Curia franci Plegij*, a View of the Pledges of Freemen; or, *Turnus Comitatus*. *Sheriff's Tourne inſtituted.*

4. At which Meeting or Court there happened, by occaſion of great Aſſemblies, much Bloodſhed, Scarcity of Proviſions, Mutinies, and the like Miſchiefs, incident to the Congregations of People; by which the King was moved to allow a Subdiviſion of every County into Hundreds; and every Hundred to have a Court; whereto the People of every Hundred *Subdiviſion of the County-Court into Hundreds.*

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dred ſhould be aſſembled twice a Year, for Survey of Pledges, and uſe of that Juſtice, which was formerly executed in that grand Court for the County; and the Count or Earl appointed a Bailiff under him, to keep the Hundred-Court.

The Charge of the County committed to the Sheriff.

5. But in the end, the Kings of this Realm found it neceſſary to have all Execution of Juſtice immediately from themſelves, by ſuch as were more bound than Earls to that Service, and readily ſubject to Correction for their Negligence or Abuſe; and therefore took to themſelves the appointing of a Sheriff yearly in every County, calling them *Vicecomites*, and to them directed ſuch Writs and Precepts for executing neceſſary Juſtice in the County; committing to the Sheriff *Cuſtodiam Comitatus*; by which the Earls ſpared their Toil and Labour; and that was laid on the Sheriffs. So that now the Sheriff does all the King's Buſineſs in the County: and this is now called the Sheriff's Tourne; that is to ſay, he is Judge of this grand Court for the County; and alſo of all Hundred-Courts not given away from the Crown.

The Sheriff Judge of all Hundred Courts.

County-Court kept monthly.

6. He has another Court, called *County-Court*, belonging to his Office, wherein Men may ſue monthly for any Debt or Damages under 40 *l.* and may have Writs to replevy their Cattle diſtrained and impounded by others; and there try the Cauſe of their Diſtreſs: and by a Writ called *Juſticies*, a Man may ſue for any Sum. And in this Court, the Sheriff, by a Writ called an *Exigent*, proclaims Men ſued in Courts above to render their Bodies, or elſe they are out-law'd.

The Office of the Sheriff.

7. The Sheriff ſerves the King's Writs of Proceſs, be they Summons, or Attachments, to compel Men to anſwer the Law; and all Writs of Execution of the Law, according to Judgments of ſuperior Courts, for taking Mens Goods, Lands, or Bodies, as the Cauſe requires.

Hundred Courts to whom firſt granted.

8. The Hundred-Courts were moſt of them granted to religious Men, Noblemen, and others of great Place: many Men alſo of good Quality have obtained by Charter, and ſome by Uſage within Manors of their own, Liberty of keeping Law-days; and there to uſe Juſtice appertaining to a Law-day.

Lord of the Hundred to appoint two High-Conſtables.

9. The Lord of the *Hundred-Court* is to appoint two *High-Conſtables* of the Hundred; and alſo to appoint in every Village a Petty-Conſtable, with a Tithing-Man, to attend in his Abſence, and to be at his Command, when he is preſent, in all Services of his Office, for his Aſſiſtance.

10. There have been, by Uſe and Statute-Law, (beſides the ſurveying of the Pledges of Freemen, giving the Oath of Allegiance, and making Conſtables,) many Additions of Powers and Authority given to the Stewards of Leets and Law-days, to be practiſed in their Courts: as for Example; they may puniſh Inn-keepers, Victuallers, Bakers, and Tradeſmen of all ſorts, ſelling with Underweights or Meaſures, or at exceſſive Prices, or things unwholſome, or ill-made, in Deceit of the People. They may puniſh thoſe that ſtop, ſtraiten, or annoy the High-ways; or do not, according to the Proviſion enacted, repair or amend them; or divert Water-courſes, or deſtroy Fiſh, or uſe Engines or Nets to take Deer, Conies,

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Conies, Pheaſants, or Partridges, or build Pidgeon-houſes; except he be Lord of the Manor, or Parſon of the Church. They may alſo take Preſentment upon Oath of the twelve ſworn Jury before them, of all Felonies; but they cannot try the Malefactors; only they muſt by Indenture deliver over thoſe Preſentments of Felony to the Judges, when they come their Circuits into that County. *What Matters they enquire of in the Leets and Law-days.*

11. All the Courts before-mentioned are in Uſe, and exerciſed as Law at this Day, concerning the Sheriffs Law-days, and Leets, and the Offices of High-Conſtables, Petty-Conſtables, and Tithing-men; tho with ſome farther Additions by Statute-Laws, laying Charge upon them for Taxation for the Poor, for Soldiers, and the like, and dealing without Corruption, and the like.

12. *Conſervators of the Peace* were in ancient Times certain, and aſſigned by the King to ſee the Peace maintained; they were called to the Office by the King's Writ, to continue for Term of their Lives, or during the King's Pleaſure. *Conſervators of the Peace at the King's Pleaſure.*

13. For this Service, Choice was made of the beſt Men of Calling in the Country, and but few in the Shire. They might bind any Man to keep the Peace, and to good Behaviour, by Recognizance to the King with Sureties; and they might, by Warrant, ſend for the Party, directing their Warrant to the Sheriff, or the Conſtable, to arreſt the Party, and bring him before them. This they did when Complaint was made by any one, that he ſtood in fear of another, and ſo took his Oath; or elſe, where the Conſervator himſelf did, without Oath or Complaint, ſee the Diſpoſition of any Man inclin'd to Quarrel, and Breach of the Peace, or to miſbehave himſelf in ſome outragious manner of Force or Fraud: there at his own Diſcretion, he might ſend for ſuch a Party, and make him find Sureties of the Peace, or of his good Behaviour, as he ſhould ſee Cauſe; or elſe commit him to the Goal, if he refuſed. *Their Office.*

14. The Judges of either Bench in *Weſtminſter*, Barons of the Exchequer, Maſter of the Rolls, and Juſtices in Eyre, and Aſſizes, in their Circuits, were all, without Writ, Conſervators of the Peace in all Shires of *England*, and continue to this Day. *Conſervators of the Peace by virtue of their Office.*

15. But now Conſervators of the Peace are out of uſe; and in lieu of them there are ordained Juſtices of the Peace, aſſign'd by the King's Commiſſions in every County, which are moveable at the King's Pleaſure; but the Power of placing and diſplacing Juſtices of the Peace, is by uſe delegated from the King to the Chancellor. *Juſtices of the Peace ordained inſtead of Conſervators.*

16. That there ſhould be Juſtices of the Peace by Commiſſions, was firſt enacted by a Statute made 1 *Edw.* III. and their Authority augmented by many Statutes made ſince in every King's Reign.

17. They are appointed to keep four Seſſions every Year; that is, every Quarter, one. Theſe Seſſions are a Sitting of the Juſtices, to diſpatch the Affairs of their Commiſſions. They have Power to hear and determine in their Seſſions, all Felonies, Breaches of the Peace, Contempts and Treſpaſſes, ſo far as to fine the Offender to the Crown; but not to award Recompence to the Party grieved. *Their Seſſions and Office.*

18. They

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18. They are to ſuppreſs Riots and Tumults; to reſtore Poſſeſſions forcibly taken away; to examine all Felons apprehended and brought before them; to ſee impotent poor People, or maim'd Soldiers, provided for, according to the Laws; and Rogues, Vagabonds, and Beggars puniſhed. They are both to licenſe and ſuppreſs Ale-houſes, Badgers of Corn and Victuals, and to puniſh Foreſtallers, Regraters, and Engroſſers.

19. Thro theſe, in effect, run all the County Services to the Crown; as Taxations of Subſidies, muſtring of Men, arming them, and levying Forces, by a ſpecial Commiſſion from the King. Any of theſe Juſtices, upon Oath taken by a Man that he ſtands in fear that another will beat, or kill him, or burn his Houſe, are to ſend for the Party, by Warrant of Attachment, directed to the Sheriff or Conſtable, and then to bind the Party with Sureties, by Recognizance to the King, to keep the Peace; and alſo to appear at the next Seſſions of the Peace; at which next Seſſions, when every Juſtice of Peace has therein delivered all his Recognizances ſo taken, the Parties are called, and the Cauſe of binding to the Peace examined; and both Parties being heard, the whole Bench is to determine, as they ſee Cauſe, either to continue the Party ſo bound, or to diſcharge him.

Quarter-Seſſions held by the Juſtices of the Peace.

20. The Juſtices of Peace in their Seſſions are attended by the Conſtables and Bailiffs of all Hundreds, and Liberties, within the County; and by the Sheriff, or his Deputy, to be employ'd as Occaſion ſerves in executing the Precepts and Directions of the Court. They proceed thus: The Sheriff ſummons twenty-four Free-holders, diſcreet Men, of the ſaid County, whereof ſome ſixteen are elected and ſworn, and have their Charge to ſerve as the Grand Jury. The Party indicted is to traverſe the Indictment, or elſe to confeſs it, and ſo ſubmit himſelf to be fined as the Court ſhall think fit; except the Puniſhment be certainly appointed, as it often is, by ſpecial Statutes.

The Authority of the Juſtices of Peace out of Seſſions.

21. The Juſtices of Peace are many in every County; and to them are brought all Traitors, Felons, and other Malefactors, directly upon their being firſt apprehended; and that Juſtice to whom they are brought examines them, and hears their Accuſation, but judges not upon it; only if he find the Suſpicion light, he takes Bond, with Sureties, of the Accuſed, to appear either at the next Aſſizes, if it be a Matter of Treaſon or Felony; or elſe at the Quarter-Seſſions, if it be concerning Riot or Miſdemeanor, or other ſmall Offence. He alſo then binds thoſe to appear that give Teſtimony, and proſecute the Accuſation, and all the Accuſers and Witneſſes, and ſo ſets the Party at large. And at the Aſſizes or Seſſions he certifies the Recognizances taken of the Accuſed, Accuſers and Witneſſes; who being there, are call'd; and appearing, the Cauſe of the Accuſed is debated, according to Law, for his clearing or condemning.

22. But if the Party accuſed ſeem, upon pregnant Matter in the Accuſation, and to the Juſtice, guilty, and the Offence be heinous, or the Offender taken with the Manner; then the Juſtice is to commit the Party, by his Warrant call'd a *Mittimus*, to the Goaler of the common Goal of the County, there to remain till the Aſſizes. And then the Juſtice is to certify

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fy his Accuſation, Examination, and Recognizance taken for the Appearances and Proſecution of the Witneſſes; ſo that the Judges may, when they come, readily proceed with him as the Law requires.

Judges of Aſſize in the Place of the ancient Judges in Eyre.

23. The Judges of the Aſſize, as they are in Place of the ancient Judges in Eyre, call'd *Juſticiarij Itinerantes*, which, in the prime Kings, after the Conqueſt, till *Henry* the Third's Time eſpecially, and after in leſs Meaſure, even to *Richard* the Second's Time, executed the Juſtice of the Realm. They began thus. The King, unable to diſpatch Buſineſs in his own Perſon, erected the Court of King's Bench; and that being unable to receive all, nor proper to draw the People all to one Place; there were ordained Counties, and the Sheriff's Tourns, Hundred-Courts, and particular Leets, and Law-days, as before-mentioned; which dealt only with Crown Matters for the Publick; but not with the private Titles of Lands, or Goods, nor the Trial of grand Offences of Treaſons and Felonies: but all the Counties of the Realm were divided into ſix Circuits; and two learned Men, well read in the Law of the Realm, were aſſigned, by the King's Commiſſion, to every Circuit; and to ride twice a Year thro thoſe Shires allotted to that Circuit; making Proclamation before-hand, a convenient time in every County, of the Day of their coming, and Place of their ſitting; to the end that People might attend them in every County of that Circuit. They were to ſtay three or four Days in every County; and during that time, all Cauſes of that County were brought before them by the Parties grieved, and all Priſoners of the ſaid Goal, in every Shire; and whatever Controverſies aroſe concerning Life, Lands, or Goods.

The Authority of the Judges in Eyre tranſlated to the Juſtices of Aſſize.

24. The Authority of theſe Judges in Eyre, is in part tranſlated by Act of Parliament to the Juſtices of Aſſize, which are now the Judges of Circuits; and they to uſe the ſame Courſe that Juſtices in Eyre did, to proclaim their coming every half Year, and the Place of their ſitting.

Juſtices of Aſſize leſſened by the Court of Common-Pleas.

25. The Buſineſs of the Juſtices in Eyre, and of the Juſtices of Aſſize, at this Day, is much leſſen'd; for in *Henry* the Third's Time there was erected the Court of Common-Pleas at *Weſtminſter*; in which Court have ever been ſince, and yet are, begun and handled, the great Suits of Lands, Debts, Benefices and Contracts, Fines for Aſſurances of Lands and Recoveries, which uſed to be either in the King's Bench, or before the Juſtices in Eyre. But the Statute of *Magna Charta* is negative againſt it; *viz. Communia placita non ſequantur curiam noſtram, ſed teneantur in aliquo loco certo*; which *Certus Locus* muſt be the Common-Pleas; yet the Judges of Circuits have now five Commiſſions, by which they ſit.

Their Commiſſions. Oyer and Terminer.

26. The *firſt* is a Commiſſion of *Oyer and Terminer*, directed to them, and many others of the beſt Account, in their Circuits; but in this Commiſſion the Judges of Aſſize are of the *Quorum*, ſo that without them there can be no Proceeding. This Commiſſion gives them Power to deal with Treaſons, Murthers, and all manner of Felonies, and Miſdemeanors whatever; and this is the largeſt Commiſſion they have.

Goal-Delivery.

27. The *ſecond* is a *Commiſſion* of *Goal-Delivery*; that is only to the Judges themſelves, and the Clerk of the Aſſize aſſociate: and by this Commiſſion

Commiſſion they are to deal with every Priſoner in the Goal, for what Offence ſoever he be committed; and to proceed with him according to the Laws of the Realm, and the Quality of his Offence: and they cannot by this Commiſſion do any thing with any Man, but ſuch as are Priſoners in the Goal. The Courſe now uſed in Execution of this Commiſſion of Goal-Delivery, is this. There is no Priſoner committed but by ſome Juſtice of the Peace, who, before he committed him, took his Examination, and bound his Accuſers and Witneſſes to appear and proſecute at the *Goal-Delivery*.

The manner of Proceeding therein.

28. This Juſtice certifies theſe Examinations and Bonds; and thereupon the Accuſer is call'd ſolemnly into the Court; and when he appears, the Juſtice is will'd to prepare a Bill of Indictment againſt the Priſoner, and to go with it to the Grand Jury, and to give evidence upon Oath, he and the Witneſſes; which he does: and the Grand Jury write thereupon either *Billa vera*, and then the Priſoner ſtands indicted; or elſe *Ignoramus*, and then he is not touched. The Grand Jury deliver theſe Bills to the Judges in their Courts; and ſo many as they find indorſed *Billa vera*, they ſend for the Priſoners. Then every Man's Indictment is put and read to him; and they aſk him whether he be guilty or not: if he ſays *Guilty*, his Confeſſion is recorded; if he ſays *not Guilty*, then he is aſked how he will be tried; he anſwers, by the Country. Then the Sheriff is commanded to return the Names of the twelve Free-holders to the Court; which Free-holders are ſworn to make true Delivery between the King and the Priſoner; then the Indictment is again read, and the Witneſſes ſworn to ſpeak their Knowledge concerning the Fact; and the Priſoner is heard at large what Defence he can make; and then the Jury go together and conſult. And after a while they come in with a Verdict of Guilty or not Guilty; which Verdict the Judges record accordingly. If any Priſoner plead not guilty upon the Indictment, and yet will not put himſelf to trial upon the Jury, or ſtand mute, he is to be preſſed.

29. The Judges, when many Priſoners are in the Goal, do in the End, before they go, peruſe every one. Thoſe that were indicted by the Grand Jury, and found not guilty by the Select Jury, they judge to be quitted; and ſo deliver them out of the Goal. Thoſe that are found guilty by both Juries, they judge to Death; and command the Sheriff to ſee Execution done. Thoſe that refuſe Trial by the Country, and ſtand mute upon the Indictment, they judge to be preſſed to Death. Some, whoſe Offences are pilfering, under twelve Pence Value, they judge to be whipp'd. Thoſe that confeſs their Indictments, they judge to Death, Whipping, or otherwiſe, as their Offence requires. And thoſe that are not indicted at all, but their Bill of Indictment returned with *Ignoramus* by the Grand Jury; and all others in the Goal, againſt whom no Bills are preferred, they acquit, by Proclamation, out of the Goal; ſo that one way or other they rid the Goal of all the Priſoners that were in it. But becauſe ſome Priſoners have their Books, and are burned in the Hand, and ſo delivered, it

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it is neceſſary to ſhew the Reaſon thereof. This having their Books, is called their Clergy, which in ancient Time began thus.

Benefit of Clergy.

30. For the Scarcity of the Clergy in the Realm of *England*, to be diſpoſed in religious Houſes; or for Prieſts, Deacons, and Clerks of Pariſhes, there was a Prerogative allowed to the Clergy, that if any Man that could read as a Clerk, were to be condemned to Death, the Biſhop of the Dioceſe might, if he would, claim him as a Clerk; and he was to ſee him tried, in the Face of the Court, whether he could read or not. The Book was prepared, and brought by the Biſhop; and the Judge was to turn to ſome Place, as he ſhould think proper; and if the Priſoner could read, then the Biſhop was to have him delivered over to him, to diſpoſe of in ſome Place of the Clergy, as he ſhould judge convenient: but if either the Biſhop would not demand him, or the Priſoner could not read, then he was to be put to Death.

31. And this Clergy was allowable in ancient Times and Law, for all Offences whatever, except Treaſon, and the robbing of Churches. But by many Statutes made ſince, the Clergy is taken away for Murder, Burglary, Robbery, Purſe-cutting, Horſe-ſtealing, and diverſe other Felonies, particularized by the Statutes to the Judges: and laſtly, by a Statute made 18 *Elizabeth*, the Judges themſelves are appointed to allow Clergy to ſuch as can read, being not ſuch Offenders from whom the Clergy is taken away by any Statutes, and to ſee them burned in the Hand, and ſo diſcharge them, without delivering them to the Biſhop; tho the Biſhop appoints the Deputy to attend the Judges with a Book, to try whether they can read or not.

Commiſſion of Aſſizes.

32. The *third* Commiſſion that the Judges of the Circuits have, is a Commiſſion directed to themſelves only; and the Clerk of the Aſſize to take Aſſizes; by which they are call'd *Juſtices of Aſſize*. And the Office of thoſe Juſtices is to do right upon Writs call'd Aſſizes, brought before them by ſuch as are wrongfully thruſt out of their Lands. Of which Number of Writs, there were many more brought before them in ancient Times than now; becauſe Mens Seizons and Poſſeſſions are ſooner recovered by ſealing Leaſes upon the Ground, and by bringing an *Ejectione firme*, and trying their Title ſo, than by the long Suits of Aſſizes.

Commiſſion of Niſi Prius.

33. The *fourth* Commiſſion, is a Commiſſion to take *Niſi Prius*, directed to none but to the Judges themſelves, and their Clerks of Aſſizes; by which they are call'd Juſtices of *Niſi Prius*. Theſe *Niſi Prius* happen in this ſort. When a Suit is begun for any Matter in one of the three Courts, the *King's Bench*, *Common Pleas*, or the *Exchequer*; and the Parties, in their Pleadings, vary in a Point of Fact: as for Example, if in an Action of Debt upon Obligation, the Defendant denies the Obligation to be his Debt; or in any Action of Treſpaſs grown for taking away Goods, the Defendant denies that he took them; or in Action of the Caſe for ſlanderous Words, the Defendant denies that he ſpoke them, *&c.* then the Plaintiff is to maintain, and prove that the Obligation is the Defendant's Deed; that he either took the Goods, or ſpoke the Words; upon

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which Denial and Affirmation the Law says, that *the Issue is join'd* betwixt them; which Issue of the Fact is to be tried by a *Jury* of twelve Men of the County, where it is supposed by the Plaintiff to be done. And for that purpose the Judges of the Court award a Writ of *Venire Facias*, in the King's Name, to the Sheriff of that County; commanding him to cause four and twenty discreet Freeholders of his County, at a certain Day, to try this Issue so join'd; out of which four and twenty, only twelve are chose to serve. And that double Number is returned, because some may make Default, and some be challenged upon Kindred, Alliance, or partial Dealing.

34. These four and twenty the Sheriff names, and certifies to the Court; and withal, that he has warned them to come at the Day, according to their Writ. But because at the first Summons there falls no Punishment upon the four and twenty if they come not, they very seldom or never appear upon the first Writ; and on their Default there is another Writ return'd to the Sheriff, commanding him to distrain them, by their Lands, to appear at a certain Day appointed by the Writ; which is the next Term after; *Nisi Prius Justiciarij nostri ad Assisas capiendas venerint*, &c. from which Words the Writ is call'd a *Nisi Prius*. And the Judges of the Circuit of that County, in that Vacation, before the Day of Appearance appointed for the Jury above; here by their Commission of *Nisi Prius*, have Authority to take the Appearance of the Jury in the County before them; and there to hear the Witnesses and Proofs on both sides, concerning the Issue of Fact; and to take the Verdict of the Jury; and against the Day they should have appeared above, to return the Verdict in the Court above; which Return is call'd a *Postea*. And upon this Verdict clearing the Matter in Fact, one way or other, the Judges above give Judgment for the Party for whom the Verdict is found; and for such Damages and Costs the Jury assesses.

35. By those Trials call'd *Nisi Prius*, the Juries and the Parties are much eased of the Charge they would be put to, by coming to *London* with their Evidences and Witnesses; and the Courts of *Westminster* are much eased of the Trouble they would have, if all the Juries for Trials should appear, and try their Causes in those Courts; for these Courts above have little Leisure now. And tho the Juries come not up, yet in Matters of great Weight, or where the Title is intricate or difficult; the Judges above, upon Information to them, retain those Causes to be tried there; and the Juries do at this Day, in such Cases, come to the Bar at *Westminster*.

Commission of Peace. 36. The *fifth Commission* that the Judges in their Circuits sit by, is the *Commission of the Peace* in every County of their Circuit. And all the Justices of the Peace, having no lawful Impediment, are bound to be present at the Assizes, to attend the Judges, as Occasion shall require. If any one make Default, the Juges may set a Fine upon him, at their Discretion. Also the Sheriff in every Shire, thro the Circuit, is to attend in Person, or by a sufficient Deputy allow'd by the Judges, all the time they are within the

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the County: and the Judges may fine him, if he fail, or for Negligence or Misbehaviour in his Office before them. And the Judges above may also fine the Sheriff, for not returning, or not sufficient returning of Writs before them.

SECT. III.

The Procedure *of the* Law *in Matter of* Property.

1. Property in Lands is acquired or transferred; (1.) by *Entry*; (2.) by *Descent*; (3.) by *Escheat*; and, (4.) most commonly by *Conveyance*. *Property of Lands, how acquired.*

2. *Property by Entry* is, where a Man finds a Piece of Land that no Person possesses, or has Title to; and he that so finds it enters: this *Entry* gains a Property. This Law seems to be derived from this Text, *Terram dedit filiis hominum*; which is to be understood, to those that will till and manure it; and so make it yield Fruit: and that is, he who enters into it, where no Man had it before. But this manner of gaining Lands was in the first Days, and is not now of use in *England*; for by the Conquest, all the Land of this Nation was in the Conqueror's Hands, and appropriated to him; except religious and Church Lands, and the Lands in *Kent*, which by Composition were left to the former Owners, as the Conqueror found them; so that none but Bishopricks, Churches, and the Men of *Kent*, can at this Day make any greater Title than from the Conquest, to any Lands in *England*. And the Lands possessed without any such Title, are in the Crown, and not in him that first enters; as it is by Land left by the Sea. This Land belongs to the King, and not to him that has the Lands next adjoining, which was the ancient Sea-bank. This is to be understood of the Inheritance of Lands; *viz.* that the Inheritance cannot be gained by the first Entry. Suppose a Man call'd *A*, having Land convey'd to him for the Life of *B*, dies without making any Estate of it; there, whoever first enters into the Land after the Decease of *A*, gets the Property in the Land, for time of the Continuance of the Estate which was granted to *A*, for the Life of *B*; which *B* yet lives; and therefore the said Land cannot return till *B* die. And to the Heir of *A* it cannot go, because it is not any Estate of Inheritance; but only an Estate for another Man's Life; which is not descendable to the Heir, except he be specially named in the Grant; *viz.* to him and his Heirs. As for the Executors of *A*, they cannot have it; for it is not an Estate testamentary, that it should go to the Executors, as Goods and Chattels should; so that in truth no Man *Property by Entry.* *Land left by the Sea belongs to the King.*

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can entitle himſelf to thoſe Lands: and therefore the Law prefers him that
Occupancy. firſt enters; and he is call'd *Occupans*, and ſhall hold it during the Life of *B*; but muſt pay the Rent, perform the Conditions, and do no waſte: and he may by Deed aſſign it to whom he pleaſe in his Life-time. But if he die before he aſſign it over; then it ſhall go again to whomſoever firſt enters and holds; and ſo all the Life of *B*, as often as it ſhall happen.

3. Likewiſe, if any Man wrongfully enters into another's Poſſeſſion, and puts the right Owner of the Freehold and Inheritance from it; he thereby gets the Freehold and Inheritance by Diſſeiſin; and may hold it againſt all Men; but him that has Right, and his Heirs, and is call'd a *Diſſeiſor*. Or if any one die ſeiſed of Lands, and before his Heir enters, one that has no Right enters into the Lands, and holds them from the right Heir, he is call'd an *Abator*; and is lawful Owner againſt all Men but the right Heir.

4. And if ſuch a Perſon, *Abator* or *Diſſeiſor*, provided the Diſſeiſor has quiet Poſſeſſion five Years next after the Diſſeiſin, continue Poſſeſſion, and die ſeiſed, and the Land deſcend to his Heir; they have gained the Right to the Poſſeſſion of the Land againſt him that has Right, till he recover it by fit Action real at the Common Law. And if it be not ſued for at the Common Law within threeſcore Years after the Diſſeiſin, or Abatement committed, the right Owner has loſt his Right by that Negligence. And if a Man has diverſe Children, and the elder, being a Baſtard, enters into the Land, and enjoys it quietly during his Life, and dies ſo ſeiſed thereof; his Heirs ſhall hold the Land againſt all the lawful Children, and their Iſſues.

Property of Lands by Deſcent. 5. *Property of Lands by Deſcent*, is that where a Man has Lands of Inheritance and dies, not diſpoſing of them, but leaving them to go, as the Law caſts it, upon the Heir. This is call'd a *Deſcent of Law*; and upon whom the Deſcent is to light, is the Queſtion. For which purpoſe, the Law of Inheritance prefers the firſt Child before all others; and amongſt Children, the Male before the Female; and amongſt Males, the firſt-born. If there be no Children, then the Brother; if no Brother, then Siſters; if neither Brothers nor Siſters, then Uncles; and for want of Uncles, Aunts; then Couſins in the neareſt Degree of Conſanguinity, with theſe
Three Rules of Deſcent. three Rules of Diverſities. (1.) That the eldeſt Male ſhall ſolely inherit; but if it come to Females, then they being all in an equal Degree of Nearneſs, ſhall inherit all together, and are call'd Parceners; and all theſe make but one Heir to the Anceſtor. (2.) That no Brother, nor Siſter of half Blood, ſhall inherit to his Brother or Siſter, but as a Child to his Parents: for Example; if a Man have two Wives, and by either Wife a Son, the eldeſt Son out-living his Father, is to be preferred to the Inheritance of the Father, being Fee-ſimple; but if he enters and dies childleſs, the Brother ſhall not be his Heir, becauſe he is of the half Blood to him; but the Uncle of the eldeſt Brother or Siſter of the whole Blood: yet if the eldeſt Brother had died, or had not entered in the Life of the Father, either

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either by ſuch Entry or Conveyance, then the youngeſt Brother ſhould inherit the Land that the Father had, altho it were a Child by the ſecond Wife, before any Daughter by the firſt. (3.) The *third* Rule about Deſcents, is, That Land purchaſed ſo by the Party himſelf that dies, is to be inherited; firſt, by the Heirs of the Father's ſide; then if he have none of that Part, by the Heirs of the Mother's ſide. But Lands deſcending to him from his Father or Mother, are to go to that ſide only from which they came, and not to the other ſide.

Cuſtoms of certain Places.

6. Theſe *Rules of Deſcent*, are to be underſtood of *Fee-ſimples*, and not of *entailed Lands*; and they are reſtrained by ſome particular Cuſtoms of particular Places: as namely, the Cuſtoms of *Kent*, that every Male of equal Degree of Childhood, Brotherhood, or Kindred, ſhall inherit equally, as Daughters ſhall, being Parceners: and in many Borough Towns in *England*, the Cuſtom allows the youngeſt Son to inherit, and ſo the youngeſt Daughter. The Cuſtom of *Kent* is call'd *Gavel-kind*. The Cuſtom of Boroughs, *Burgh-Engliſh*.

Every Heir having Land, is bound by the binding Acts of his Anceſtors.

7. There is another thing to be obſerved in Fee-ſimple Inheritance; *viz.* that every Heir having Fee-ſimple Land or Inheritance, be it by Common Law or by Cuſtom, either of *Gavel-kind* or *Burgh-Engliſh*, is chargeable, ſo far as the Value thereof extends, with the binding Acts of the Anceſtors from whom the Inheritance deſcends; and theſe Acts are collateral Incumbrances: and the Reaſon of this Charge is, *Qui ſentit commodum, ſentire debet & incommodum, ſive Onus.* As for Example; if a Man bind himſelf and his Heirs in an Obligation, or Covenant by Writing, for him and his Heirs, or grant an Annuity for him and his Heirs, or make a Warranty of Land, binding him and his Heirs to Warranty; in all theſe Caſes the Law charges the Heir, after the Death of the Anceſtor, with this Obligation, Covenant, Annuity, and Warranty; yet with theſe three Cautions: firſt, that the Party muſt, by ſpecial Name, bind himſelf and his Heirs, or covenant, grant, and warrant for himſelf and his Heirs; otherwiſe the Heir is not to be touched.

8. *Secondly*, that ſome Action muſt be brought againſt the Heir, whilſt the Land or other Inheritance reſts in him unaliened away: for if the Anceſtor die, and the Heir, before an Action be brought againſt him upon theſe Bonds, Covenants, or Warranties, do alien away the Land, then the Heir is clean diſcharged of the Burden; except the Land was by Fraud convey'd away, on purpoſe to prevent the Suit intended againſt him.

9. *Thirdly*, that no Heir is farther to be charged, than the Value of the Land deſcended to him, from the ſame Anceſtor that made the Inſtrument of Charge; and that Land alſo, not to be ſold out-right for the Debt; but to be kept in extent, and at a yearly Value, until the Debt or Damage be run out.

10. Nevertheleſs, if an Heir that is ſued upon ſuch a Debt of his Anceſtor, do not deal clearly with the Court when he is ſued; that is, if he come not in immediately, and by way of Confeſſion ſet down the true Quantity of his Inheritance deſcended; and ſo ſubmit himſelf, as the Law requires;

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Heirs charged for false Plea. requires; then the Heir that otherwise demeans himself, shall be charged of his own Lands, or Goods, and of his Money, for this Deed of his Ancestor. As for Example; if a Man bind himself and his Heirs in an Obligation of one hundred Pounds, and dies, leaving but ten Acres of Land to his Heir; if his Heir be sued upon the Bond, and comes in, and denies that he has any Lands by Descent; and it is found against him by the Verdict, that he has ten Acres; this Heir shall be new charged by his false Plea of his own Lands, Goods and Body, to pay the three hundred Pounds, altho the ten Acres be not worth ten Pounds.

Property of Lands by Escheat. 11. *Property of Lands by Escheat*, is where the Owner died seised of the Lands in Possession, without Child or other Heir, whereby the Land, for want of other Heir, is said to escheat to the Lord of whom it is held.

The Causes of Escheat. This Want of Heir happens principally in two Cases: *first*, where the Land's Owner is a Bastard. *Secondly*, where he is attainted of Felony or Treason: For neither can a Bastard have any Heir, except it be his own Child, nor a Man attainted of Treason, tho it be his own Child.

Attainder of Treason entitles the King. 12. Upon Attainder of Treason, the King is to have the Land, tho he be not the Lord of whom 'tis held; because it is a royal *Escheat*. But for Felony, the King is not to have the Escheat, except the Land be held of him: and yet where the Land is not held of him, the King is to have the Land for a Year and a Day next ensuing the Judgment of the Attainder, with a Liberty to commit all manner of waste, all that Year, in Houses, Gardens, Ponds, Lands and Woods.

13. In these Escheats two things are especially to be observed; *viz.* (1.) the Tenure of the Lands, because it directs the Person to whom the Escheat belongs; *viz.* the Lord of the Manor of whom the Land is held. (2.) The manner of such Attainder which draws with it the Escheat. Concerning the Tenure of Lands, it is to be understood, that all Lands are held of the Crown, either mediately or immediately; and that the Escheat appertains to the immediate Lord, and not to the mediate. The Reason why all Land is held of the Crown immediately, or by Mesne Lands, is this. The Conqueror got, by Right of Conquest, all the Land of the Realm into his own Hands, in Demesne; taking away from every Man all Estate, Tenure, Property, and Liberty of the same; except religious and Church-Lands, and the Land in *Kent*: and still as he gave any of it out of his own Hand, he reserved some Retribution of Rents, or Services, or both, to him and his Heirs; which Reservation is called the Tenure of

Knight's Service instituted. Land. In which Reservation he had four Institutions, exceeding politick and suitable to the State of a Conqueror.

14. The *first* was, that seeing his People to be part *Normans* and part *Saxons*; (the *Normans* he brought with him, the *Saxons* he found here;) he bent himself to conjoin them by Marriages in Amity; and for that purpose ordains, that if those of his Nobles, Knights, and Gentlemen, to whom he gave great Rewards of Lands, should die, leaving their Heir within Age, a Male within twenty-one, and a Female within fourteen Years, and unmarried; then the King should have the bestowing of such Heirs

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Heirs in Marriage in such a Family, and to such Persons as he should think fit; which Interest of Marriage went still implied, and is at this Day in every Tenure call'd Knight's-Service.

15. The *second* was, to the End that his People should be still continued in warlike Exercises, and able for his Defence. When, therefore, he gave any good Portion of Lands, that he might make the Party of Ability or Strength, he withal reserved this Service, that the Party and his Heirs having such Lands, should keep a Horse of Service continually, and serve upon him, himself, when the King went to War: or else having Impediment, to excuse his own Person, should find another to serve in his Place: which Service of Horse and Man, is a Part of that Tenure call'd *Knight's-Service* at this Day.

16. But if the Tenant himself be an Infant, the King is to hold this Land himself till he come to full Age, finding him Meat, Drink, Apparel, and other Necessaries; and finding a Horse and Man with the Overplus, to serve in the Wars; as the Tenant himself should do, if he were at full Age.

17. But if this Inheritance should descend upon a Woman, that cannot serve by her Sex, then the King is not to have the Lands; she being fourteen Years of Age; because she is then able to have a Husband that may do the Service in Person.

18. The *third Institution* was, that upon every Gift of Land, the King reserv'd a Vow and Oath, to bind the Party to his Faith and Loyalty; that Vow was called Homage, and the Oath Fealty. Homage is to be done kneeling; holding his Hands between the Knees of the Lord; saying in *French*, *I become your Man of Life and Limb, and of earthly Honour*. Fealty is to take an Oath upon a Book, that he will be a faithful Tenant to the King, and do his Service, and pay his Rents according to his Tenure.

19. The *fourth Institution* was, that for Recognition of the King's Bounty, by every Heir succeeding his Ancestor in those Knight's-Service Lands, the King should have *Primier Seisin* of the Lands, which is one Year's Profit of the Lands; and till this be paid, the King is to have Possession of the Land, and then to restore it to the Heir; which continues at this Day, and is the very Cause of suing Livery, and that as well where the Heir has been in Ward, as otherwise.

20. These are the Rights of the Tenure call'd Knight's-Service *in Capite*; which is as much as to say, a Tenure *de Persona Regis*; and *Caput* being the chiefest Part of the Person, it is call'd a Tenure *in Capite*, or in chief. 'Tis also to be noted, that as this Tenure *in Capite* by Knight's-Service, generally was a great Safety to the Crown; so also the Conqueror instituted other Tenures *in Capite*, necessary to his Estate; *viz.* he gave diverse Lands to be held of him, by some special Service about his Person, or by bearing some special Office in his House, or in the Field, which have Knight's-Service, and more in them; and these he call'd *Tenures by grand Sergeantry*. He also provided, upon the first Gift of Lands,

Knight's Service in Capite.

to

to have Revenues by continual Service of ploughing his Land, repairing his Houſes, Parks, Pales, Caſtles, and the like: And ſometimes to a yearly Proviſion of Gloves, Spurs, Hawks, Horſes, Hounds, and the like; which kind of Reſervations are call'd alſo Tenures in chief, or *in Capite* of the King; but they are not by Knight's-Service; becauſe they required no perſonal Service; but ſuch things as the Tenants may hire another to do, or provide by Money.

The Inſtitution of Soccage in Capite.

21. And this Tenure is call'd a Tenure by Soccage *in Capite*; the Word *Socagium* ſignifying the Plough; tho in later times, the Service of ploughing the Land is turned into Money Rent; and ſo of Harveſt Works; becauſe the Kings do not keep their Demeſne in their own Hands, as they uſed to do; yet what Lands were *de antiquo Dominio Coronæ*, well appears in the Records of the Exchequer call'd the Book of *Doomſday*. And the Tenants, by ancient Demeſne, have many Immunities and Privileges at this Day, that in ancient Times were granted to thoſe Tenants by the Crown; the Particulars whereof are too long to ſet down.

22. Theſe *Tenures in Capite*, as well that by *Soccage*, as the others by Knight's-Service, have this Property; that the Tenants cannot alien their Lands without Licence of the King: if they do, the King is to have a Fine for the Contempt, and may ſeize the Land, and retain it till the Fine be paid. The Reaſon is, becauſe the King would have a Liberty in the Choice of his Tenant; ſo that no Man ſhall preſume to enter into thoſe Lands, and hold them, for which the King was to have thoſe ſpecial Services done him, without the King's Leave. This Licence and Fine, as it is now digeſted, is eaſy, and of Courſe.

Office of Alienation.

23. There is an *Office* call'd the *Office of Alienation*, where any Man may have Licence at a reaſonable Rate; that is, at the third part of one Year's Value of the Land moderately rated. A Tenant *in Capite* by Knight's-Service, or grand Sergeantry, was reſtrained by ancient Statute, that he ſhould not give, nor alien away, more of his Lands, than that with the reſt he might be able to do the Service due to the King; but this is now diſuſed.

Aid, what.

24. And to this Tenure by Knight's-Service in Chief, was incident that the King ſhould have a certain Sum of Money, call'd *Aid*, due to be ratably levied among all thoſe Tenants proportionably to his Lands, to make his eldeſt Son a Knight, or to marry his eldeſt Daughter.

Tenants by Soccage and in Capite.

25. And it is to be obſerved, that all thoſe who hold Lands by the Tenure of Soccage *in Capite*, altho not by Knight's-Service, cannot alien without Licence; and they are to ſue Livery, and pay *Primier Seiſin*, but not to be in Ward for Body or Land.

Manors, how firſt created.

26. In Imitation of the King's Policy in theſe Inſtitutions of Tenures, the great Men and Gentlemen of this Realm did the like, as near as they could: thus when the King had given to any of them two thouſand Acres of Land, the Party purpoſing in this Place to make his Dwelling; or, as the old Word is, his Manſion-Houſe, or his Manor-Houſe, deviſed how he might make his Land a complete Habitation, to ſupply him with all

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all Neceſſaries; and for that purpoſe he would give of the extreme Parts of thoſe two thouſand Acres, a hundred, or two hundred Acres, more or leſs, as he ſhould think fit, to one of his moſt truſty Servants, with ſome Reſervation of Rent, to find a Horſe for the Wars, and go with him when he went with the King to the Wars; adding a Vow of Homage, and the Oath of Fealty, Wardſhip, Marriage, and Relief. This *Relief* is to pay five Pounds for every Knight's Fee, or after that Rate for more or leſs, at the Entrance of every Heir; which Tenant ſo created and placed, was, and is to this Day call'd a *Tenant by Knight's-Service*, and not by his own Perſon, but of his Manors: of theſe he might make as many as he pleaſed. Then this Lord would provide that the Land he was to keep for his own Uſe, ſhould be ploughed, and his Harveſt brought home, his Houſe repaired, his Park paled, and the like: and for that end he would give ſome leſſer Parcels to ſundry others, of twenty, thirty, forty, or fifty Acres; reſerving the Service of ploughing a certain Quantity, or ſo many days of his Land, and certain Harveſt Works, or Days in the Harveſt, to labour; or to repair the Houſe, Park-Pale, or otherwiſe; or to give him for his Proviſion, Capons, Hens, Pepper, Cumin, Roſes, Gilliflowers, Spurs, Gloves, or the like; or to pay him a certain Rent, and to be ſworn his faithful Tenant; which Tenure was call'd a *Soccage Tenure*, and is ſo to this Day: tho moſt of the Ploughing and Harveſt Services are turned into Money Rents.

Tenant by Knight's-Service.

Soccage-Tenure.

25. The *Tenants in Soccage*, at the Death of every Tenant, were to pay *Relief*, which was not as Knight's-Service is, five Pounds a Knight's Fee; but it was, and is ſtill ſo, one Year's Rent of the Land; and no Wardſhip, or other Profit to the Lord. The Remainder of the two thouſand Acres he kept to himſelf; which he uſed to manure by his Bondmen, and appointed them, at the Courts of his Manor, how they ſhould hold it, making an Entry of it into the Roll of the Remembrances of the Acts of his Court; yet ſtill in the Lord's Power to take it away; and therefore they were call'd Tenants at Will, by *Copy of Court-Roll*; being in truth Bond-men at the beginning: but having obtained Freedom of their Perſons, and gain'd a Cuſtom by uſe of occupying their Lands, they now are call'd Copy-holders, and are ſo priviledged, that the Lord cannot put them out; and all thro Cuſtom. Some *Copy-holders* are for Lives; one, two, or three ſucceſſively; and ſome Inheritances from Heir to Heir by Cuſtom; and Cuſtom rules theſe Eſtates wholly, both for Widows, Eſtates, Fines, Harriots, Forfeitures, and all other things.

Relief of Tenants in Soccage.

Tenure by Copy.

26. Manors being thus made at the firſt, it was reaſonable the Lord of the Manor ſhould hold a Court; which is no more than to aſſemble his Tenants together at a time by him appointed: in which Court he was to be informed, by the Oath of his Tenants, of all ſuch Duties, Rents, Reliefs, Wardſhips, Copy-holds, or the like, that had happened to him; which Information is call'd a *Preſentment*: and then his Bailiff is to ſeize and diſtrain for thoſe Duties, if they were denied or with-held. This Court is call'd a *Court-Baron*: and herein a Man may ſue for any Debt or Treſ-

Court-Baron.

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paſs under forty Pound Value; and the Freeholders are to judge of the Cauſe, upon Proof produced on both ſides. And therefore the Freeholders of theſe Manors, as incident to their Tenures, do hold by *Suit of Court*; which is to come to the Court, and there to judge between Party and Party in thoſe petty Actions; and alſo to inform the Lord of Duties, Rents, and Services unpaid to him from his Tenants. By this Courſe it is diſcerned who are the Lords of Lands; ſuch as if the Tenants die without Heir, or be attainted of Felony or Treaſon, ſhall have the Land by Eſcheat.

What Attainders give the Eſcheat to the Lord.

27. Now for what Attainders ſhall give the Eſcheat to the Lord; it muſt either be by Judgment of Death, given in ſome Court of Record againſt the Felon found guilty by Verdict, or Confeſſion of the Felony; or elſe by Outlawry of him.

Outlawry.

28. The Outlawry proceeds thus. A Man is indicted for Felony, being not in hold; ſo that he cannot be brought in Perſon to appear and be tried; inſomuch that Proceſs of *Capias* is therefore awarded to the Sheriff, who not finding him, returns, *non eſt inventus in balliva mea*; and thereupon another *Capias* is awarded to the Sheriff, who likewiſe, not finding him, makes the ſame Return; then a Writ, call'd an *Exigent*, is directed to the Sheriff, commanding him to proclaim him, in his County-Court, five ſeveral Court-Days, to yield his Body: which if the Sheriff do, and the Party yield not his Body, he is ſaid, by the Default, to be out-law'd; the Coroners there adjudging him out-law'd, and the Sheriff making the Return of the Proclamations, and of the Judgment of the Coroners upon the Back-ſide of the Writ. This is an Attainder of Felony; whereupon the Offender forfeits his Lands, by an Eſcheat to the Lord of whom they are held.

Prayer of Clergy.

29. But a Man found guilty of Felony by Verdict or Confeſſion, and praying his Clergy; and thereupon reading as a Clerk, and ſo burnt in the Hand and diſcharged; is not attainted; becauſe by his Clergy he prevents the Judgment of Death, and is call'd a Clerk-Convict; who loſes not his Lands, but all his Goods, Chattels, Leaſes, and Debts.

Standing mute.

30. So a Man indicted, that will not anſwer, nor put himſelf upon Trial, altho he be by this to have Judgment of preſſing to Death, yet he forfeits no Lands; but Goods, Chattels, Leaſes, and Debts; except his Offence be Treaſon; and then he forfeits his Lands to the Crown.

Felo de ſe, and flying.

31. So a Man that kills himſelf ſhall not loſe his Lands, but his Goods, Chattels, Leaſes, and Debts: and the like of thoſe that kill others in their own Defence, or by Misfortune. A Man that being purſued for Felony, and flys for it, loſes his Goods for his flying; altho he return and is tried, and not found guilty of the Fact.

Not ſurrendring.

32. So a Man indicted of Felony, if he yield not his Body to the Sheriff till after the Exigent of Proclamation is awarded againſt him, forfeits all his Goods for his Delay; altho he be not found guilty of the Felony: but none are attainted to loſe Lands, beſides ſuch as have Judgment

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ment of Death by Trial upon Verdict, or their own Confeſſion, or are by Judgment of the Coroner's out-law'd, as before.

33. Beſides the Eſcheats of Lands to the Lords of whom they are held for want of Heirs, and by Attainder of Felony; which only hold Place in Fee-ſimple Lands; there is alſo Forfeiture of Lands to the Crown, but not to the Lord. *Forfeiture of Lands to the Crown.*

34. And if a Man having an Eſtate for Life of himſelf, or of another, commit Treaſon or Felony, the whole Eſtate is forfeited to the Crown; but no Eſcheat to the Lord. *For Treaſon.*

35. But a Copy-hold, for Fee-ſimple, or for Life, is forfeited to the Lord, and not to the Crown; and if it be entail'd, the Lord is to have it during the Life of the Offender only; and then his Heir is to have it.

36. The Cuſtom of *Kent* is, that Gavelkind-Land is not forfeitable, nor eſcheatable, for Felony: for they have an old Saying; *The Father to the Bough, and the Son to the Plough.*

37. If the Huſband was attainted, the Wife was to loſe her Thirds, in Caſes of Felony or Treaſon; yet ſhe is no Offender; but at this Day 'tis held by Statute-Law, that ſhe loſes them not for the Huſband's Felony. The Relation of theſe Forfeits runs thus. That Men attainted of Felony or Treaſon, by Verdict or Confeſſion, forfeit all the Lands they had at the time of the Offence committed; and the King or the Lord, whoever of them has the Eſcheat or Forfeiture, ſhall come in, and avoid all Leaſes, Statutes, or Conveyances done by the Offender, at any time ſince the Offence committed. And ſo the Law is clear alſo, if a Man be attainted for Treaſon by Out-lawry. But upon Attainder of Felony by Out-lawry, it has been much doubted by the Law Books, whether the Lord's Title by Eſcheat ſhall relate back to the time of the Offence done, or only to the Date or Teſt of the Writ of Exigent for Proclamation; whereupon he is out-law'd: tho at this Day it is ruled, that it ſhall reach back to the time of his Fact; but for Goods, Chattels, and Debts, the King's Title ſhall look no further back than to thoſe Goods which the Party attain'd by Verdict or Confeſſion, had at the time of the Verdict and Confeſſion, given or made; and in Out-lawries, at the time of the *Exigent*, as well in Treaſons as Felonies: wherein it is to be obſerved, that upon the Parties being firſt apprehended, the Kings Officers are to ſeize all the Goods and Chattels, and preſerve them together; diſpending only ſo much out of them, as is fit for the Suſtentation of the Perſon in Priſon; without any Waſte or diſpoſing of them till Conviction; and then the Property of them is in the Crown, and not before. *Felony.*

38. Note alſo, that Perſons attainted for Felony or Treaſon, have no Capacity to take, obtain, or purchaſe, ſave only to the Uſe of the King, till the Party be pardoned. Yet the Party gives not back his Lands or Goods, without a ſpecial Patent of Reſtitution; which cannot reſtore the Blood without an Act of Parliament. So if a Man have a Son, and then is attainted of Felony or Treaſon, and pardoned; and purchaſes Lands, and then has Iſſue another Son, and dies; the Son he had before he was

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pardoned, altho he be his eldeſt Son, and the Patent have the Words of Reſtitution to his Lands, ſhall not inherit, but his ſecond Son ſhall; becauſe the Blood is corrupted by the Attainder, and cannot be reſtored by Patent alone, but by Act of Parliament. And if a Man have two Sons, and the eldeſt is attainted in the Life of his Father, and dies without Iſſue, the Father living, the ſecond ſhall inherit the Father's Lands; but if the eldeſt Son have any Iſſue, tho he die in the Life of his Father, then neither the ſecond Son, nor the Iſſue of the eldeſt, ſhall inherit the Father's Lands; but the Father ſhall there be accounted to die without Heir, and the Land ſhall eſcheat, whether the eldeſt Son have Iſſue or not, afterwards or before, tho he be pardoned after the Death of his Father.

SECT. IV.

Of PROPERTY *of* LANDS *by* CONVEYANCE.

Eſtates, how created by Leaſe Parole.

1. ESTATES are created by Word, by Writing, or by Record. *Eſtates of Years*, which are commonly call'd *Leaſes for Years*, are made thus. Where the Owner of the Land agrees with the other by Word of Mouth, that the other ſhall have, hold, and enjoy the Land, to take the Profits thereof for a certain Term of Years, Months, Weeks, or Days, agreed between them; this is call'd a *Leaſe Parole*. Such a Leaſe may be made by Writing, Pole, or indented of Device, Grant, and to Farm let, and alſo by Fine of Record; but whether any Rent be reſerved or no, is not material.

Leaſes go to Executors, not Heirs.

2. To theſe Leaſes may be annexed ſuch Exceptions, Conditions, and Covenants, as the Parties can agree on. They are call'd *Chattels real*; and are not inheritable by the Heirs, but go to the Executors and Adminiſtrators, and are ſaleable for Debts in the Life of the Owner, or in the Executors, or Adminiſtrators Hands, by Writs of Execution upon Statutes, Recognizances, Judgments of Debts or Damages. They are alſo forfeitable to the Crown by Out-lawry, by Attainder for Treaſon, Felony, or *Præmunire*, Self-Murder, flying for Felony, altho not guilty of the Fact; ſtanding out, or refuſing to be tried by the County, by Conviction of Felony, by Verdict without Judgment, Petty-Larceny, or going beyond the Sea without Licence.

How forfeited.

Chattels real.

3. They are forfeitable to the Crown, in like manner as Leaſes for Years, or Intereſt, got in other Mens Lands, by extending for Debt upon Judgment in any Court of Record, Statute-Merchant, Statute-Staple, Recognizances; which being upon Statutes, are call'd Tenants by Statute-Merchant, or Staple; the other Tenants by *elegit*, and by Wardſhip of Body and Lands: for all theſe are call'd *Chattels real*, and go to the Executors and

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and Adminiſtrators, and not to the Heirs; and are ſaleable and forfeitable, as Leaſes for Years are.

4. Leaſes for Lives are alſo call'd *Freeholds*; and may likewiſe be made by Word or Writing. There muſt be Livery and Seiſin given at the making of the Leaſe by him we call the Leſſor; who comes to the Door, Backſide, or Garden, if it be a Houſe; if not, then to ſome part of the Land, and there expreſſes, that he does grant to the Taker, call'd the Leſſee, for Term of his Life: and in Seiſin thereof, he delivers to him a Turf, Twig, or Ring of the Door: and if the Leaſe be by Writing, then commonly there is a Note written on the Backſide of the Leaſe, with the Names of thoſe Witneſſes, who were preſent at the time of the Livery and Seiſin made. This Eſtate is not ſaleable by the Sheriff for Debt; but the Land is to be extended for a yearly Value, to ſatisfy the Debt. 'Tis not forfeitable by Out-lawry, except in Caſes of Felony; nor by any of the Means before-mention'd, of Leaſes for Years; ſaving in an Attainder for Felony, Treaſon, or *Præmunire*; and then only to the Crown, and not to the Lord, by Eſcheat. *Leaſes for Lives; or Freeholds.* *How forfeited.*

5. And tho a Nobleman, or other, have liberty by Charter, to have all Felons Goods; yet a Tenant holding for Term of Life, being attainted of Felony, forfeits to the King, and not to this Nobleman.

6. If a Man have an Eſtate in Lands for another's Life, and dies; this Land cannot go to his Heir, nor to his Executors, but to the Party that firſt enters; and he is call'd an Occupant, as before-mention'd.

7. A Leaſe for Years, or Life, may be made alſo by Fine of Record, or Bargain and Sale, or Covenant, to ſtand ſeized upon good Conſiderations of Marriage, or Blood: the Reaſons whereof are hereafter expreſſed. *Entails.*

8. Entails of Lands are created by a Gift, with Livery and Seiſin to a Man, and to the Heirs of his Body; this Word, *Body*, making the Entail, may be demonſtrated and reſtrained to the Males or Females, Heirs of their two Bodies, or of the Body of either of them, or of the Body of the Grandfather or Father.

9. Entails of Lands began by a Statute made in the time of *Edward* the Firſt; by which alſo they are ſo much ſtrengthened, as that the Tenant in Tail could not put away the Land from the Heir, by any Act of Conveyance or Attainder; nor let it, nor incumber it, longer than his own Life. *Their Origin.*

10. But the Inconvenience thereof was great; for by that means, the Land being ſo ſure tied upon the Heir that his Father could not put it from him, it made the Son diſobedient, negligent, and waſteful; often marrying without the Father's Conſent; and to grow inſolent in Vice; knowing that there could be no Check of diſinheriting him. It alſo made the Owners of the Land leſs fearful to commit Murders, Felonies, Treaſons, and Man-ſlaughters; as they knew none of theſe Acts could hurt the Heir of his Inheritance. It hinder'd Men who had entail'd Lands, that they could not make the beſt of their Lands by Fine and Improvement; becauſe *Inconveniencies*

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becauſe none, upon ſo uncertain an Eſtate, as for the Term of his own Life, would give him a Fine of any Value; or lay any great Stock upon the Land, that might yield Rent improved. Laſtly, theſe Entails defrauded the Crown, and many Subjects, of their Debts; becauſe the Land was not liable any longer than his own Life-time; whence the King could not ſafely commit any Office of Account to ſuch whoſe Lands were entail'd, nor other Men truſt them with Loan of Money.

remedied by Statutes.

11. Theſe Inconveniencies were all remedied by Acts of Parliament, later than the Acts of Entails, made 4 *Hen.* VII. 32 *Hen.* VIII. A Tenant in Tail may diſinherit his Son by a Fine, with Proclamation; and may by that means alſo make it ſubject to his Debts and Sales.

12. By a Statute made 26 *Hen.* VIII. a Tenant in Tail forfeits his Lands for Treaſon: and by another Act of Parliament, 32 *Hen.* VIII. he may make Leaſes good againſt his Heir for one and twenty Years, or three Lives; ſo that if it be not of his chief Houſes, Lands, or Demeſne, or any Leaſe in Reverſion, nor leſs Rent reſerved than the Tenants have paid moſt part of one and twenty Years before; nor have any manner of Diſcharge for doing Waſtes and Spoils: by a Statute made 33 *Hen.* VIII. Tenants of entail'd Lands are liable to the King's Debts by Extent; and by a Statute made 13 and 39 *Eliz.* they are ſaleable for the Arrearages, upon his Account, for his Office; ſo that now it reſts, that entail'd Lands have two Privileges only; *viz. Firſt*, not to be forfeited for Felonies: and *ſecondly*, not to be extended for Debts after the Parties Death; except the Entails be cut off by Fine and Recovery.

Perpetuity.

13. But note, that ſince theſe notable Statutes and Remedies provided by Statutes, dock Entails, there is ſtarted up a Device call'd *Perpetuity*; which is an Entail with an Addition of a Proviſo conditional, tied to his Eſtate, not to put away the Land from his next Heir; and if he do, to forfeit his own Eſtate. Which Perpetuities, if they ſhould ſtand, would bring in all the former Inconveniencies ſubject to Entails, that were cut off by the former Statutes, and far greater; for by the *Perpetuity*, if he that is in Poſſeſſion ſtart away never ſo little, as in making a Leaſe, or ſelling a little Quillet, forgetting after two or three Deſcents, as they often do, how they are tied; the next Heir muſt enter, who peradventure is his Son, his Brother, Uncle, or Kinſman. And this raiſes unkind Suits, ſetting all that Kindred at Jars; ſome taking one part, ſome another; and the principal Parties waſting their Time and Money in Suits of Law. So that in the end they are both conſtrained by Neceſſity, to join in a Sale of the Land, or a great part of it, to pay their Debts, occaſioned thro their Suits: and if the Chief of the Family for any good Purpoſe of well ſeating himſelf, by ſelling that which lies far off, is to buy that which is near, or for the Advancement of his Daughters, or younger Sons, ſhould have reaſonable Cauſe to ſell; this *Perpetuity*, if it ſhould hold good, reſtrains him. And more than that, where many are Owners of Inheritance of Land not entail'd, they may, during the Minority of the eldeſt Son, appoint the Profits to go to the Advancement of the younger Sons and Daughters, and

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and pay Debts; but by Entails and Perpetuities, the Owners of these Lands cannot do it; but they must suffer the whole to descend to the eldest Son, and so to come to the Crown by Wardship all the time of his Infancy.

14. Wherefore, seeing the dangerous Times and untowardly Heirs, they might prevent those Mischiefs of undoing their Houses, by conveying the Land from such Heirs, if they were not tied to the Stake by these Perpetuities, and restrained from forfeiting to the Crown, and disposing it to their own, or to their Childrens Good; it is worthy of Consideration, whether it be better for the Subject and Sovereign to have the Lands secured to Mens Names and Bloods by Perpetuities, with all the Inconveniencies above-mention'd, or to hazard the Undoing of Families by unthrifty Posterity.

15. The last and greatest Estate of Lands is *Fee-simple*; and beyond this there is none of the former for Lives, Years, or Entails; but beyond them is Fee-simple. For it is the greatest, last, and utmost Degree of Estates in Land; therefore he that makes a Lease for Life, or a Gift in Tail, may appoint a Remainder when he makes another for Life or in Tail, or a third in Fee-simple; but after a Fee-simple he can limit no other Estate. And if a Man dispose not of the Fee-simple by way of Remainder, when he makes the Gift in Tail, or for Lives; then the Fee-simple rests in himself as a Reversion. *Fee-simple.*

16. The Difference between a Reversion and a Remainder is this. The Remainder is always a succeeding Estate, appointed upon the Gifts of a precedent Estate, at the time when the Precedent is appointed. But the Reversion is an Estate, left in the Giver, after a particular Estate made by him for Years, Life, or Entail: where the Remainder is made with the particular Estates, then it must be done by Deeds in Writing, with Livery and Seisin, and cannot be by Words; and if the Giver will dispose of the Reversion after it remains in himself, he is to do it by Writing, and not by Word; and the Tenant is to have Notice of it, and to atturne it; which is to give his Assent by Word, or paying Rent, or the like: and except the Tenant will thus atturne, the Party to whom the Reversion is granted, cannot have the Reversion; neither can he compel him by any Law to atturne, except the Grant of the Reversion be by Fine; and then he may, by a Writ provided for that purpose: and if he do not purchase that Writ, yet by the Fine the Reversion shall pass; and the Tenant shall pay no Rent, except he will himself; nor be punished for any Waste in Houses, Woods, *&c.* unless it be granted by Bargain and Sale, by Indenture enroll'd. These Fee-simple Estates lie open to all Perils of Forfeitures, Extents, Incumbrances, and Sales. *The Difference betwixt Reversion and Remainder.*

17. *Lands are convey'd* six Ways; (1.) by *Feoffment*, which is where, by Deed, Lands are given to one and his Heirs, and Livery and Seisin made according to the Form and Effect of the Deed: if a lesser Estate than Fee-simple be given, and the Livery of Seisin made, it is not call'd a Feoffment, except the Fee-simple to be conveyed; but it is otherwise call'd a Lease for Life, or Gift Entail, as above-mention'd. *Lands conveyed by* Feoffment.

18. (2.)

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18. (2.) A *Fine* is a real Agreement, beginning thus; *Hæc eſt finalis concordia*, &c. This is done before the King's Judges in the Court of Common Pleas, concerning Lands that a Man ſhould have from another to him and his Heirs, or to him for his Life, or to him and the Heirs male of his Body, or for Years certain; whereupon Rent may be reſerved, but no Condition or Covenants. This *Fine* is a Record of great Credit: and upon this Fine are four Proclamations made openly in the Common Pleas; that is, in every Term one, for four Terms together; and if any Perſon, having Right to the ſame, make not claim within five Years after the Proclamation ended, he loſes his Right for ever; except it be an Infant, a Woman Covert, a Mad-man, or one beyond the Seas; and then his Right is ſaved; ſo that the Claim be made within five Years after the Death of the Huſband, Recovery of Senſes, or Return from beyond Sea. This *Fine* is call'd a *Feoffment of Record*; becauſe it includes all that the *Feoffment* does; and works farther of its own Nature, and bars Entails peremptorily, whether the Heir claim within five Years, or not; if he claim by him that levied the Fine.

Recovery. 19. (3.) *Recoveries* are when for Aſſurances of Lands, the Parties agree that one ſhall begin an *Action real* againſt the other, as if he had good Right to the Land; and the other ſhall not enter into Defence againſt it, but alledge that he bought the Land of *J. H.* who had warranted it unto him, and pray that *J. H.* may be call'd in to defend the Title; which *J. H.* is one of the Criers of the Common-Pleas; and is call'd the Common-Voucher. This *J. H.* ſhall appear, and make as if he would defend it; but ſhall pray a Day to be aſſign'd him in his Matter of Defence; which being granted, at the Day he makes Default, and thereupon the Court is to give Judgment againſt him; which cannot be for him to loſe his Land, becauſe he has it not; but the Party that he ſold it to has that, who vouched him to warrant it.

20. Therefore the *Demandant*, who has no Defence made againſt it, muſt have Judgment to have the Land, againſt him that he ſued, who is call'd the Tenant; and the Tenant is to have Judgment againſt *J. H.* to recover in Value ſo much Land of his, where in Truth he has none, nor never will. And by this Device, grounded upon the ſtrict Principles of Law, the firſt Tenant loſes the Land, and has nothing for it; but it is by his own Agreement for Aſſurance to him that bought it.

21. This Recovery bars Entails, and all Remainders and Reverſions that ſhould take place after the Entails; ſaving where the King is the Giver of the Entail, and keeps the Reverſion to himſelf; then neither the Heir, nor the Remainder, nor Reverſion, is barred by the Recovery.

22. The Reaſon why the Heirs, Remainders and Reverſions, are thus barred, is becauſe, in ſtrict Law, the Recompence adjudged againſt the Crier that was Vouchee, is to go in Succeſſion of Eſtate, as the Land ſhould have done; and then it was not Reaſon to allow the Heir Liberty to keep the Land itſelf, and alſo to have Recompence; and therefore he loſes the Land, and is to truſt to the Recompence.

23. This

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23. This Device was firſt invented, when Entails fell out to be ſo inconvenient as is before declared; ſo that Men made no Conſcience to cut them off, if they could find Law for it. And now, by uſe, thoſe Recoveries are become common Aſſurances againſt Entails, Remainders and Reverſions, and are the greateſt Security Purchaſers have for their Money; for a Fine will bar the Heir in Tail; and not the Remainder, nor Reverſion, but a common Recovery will burthen all.

Feoffments and Recoveries.

24. Upon *Feoffments* and *Recoveries*, the Eſtate ſettles as the Uſe and Intent of the Parties is declared by Word or Writing, before the Act was done: as for Example; if they make a Writing that one of them ſhall levy a Fine, make a Feoffment, or ſuffer a common Recovery to the other; but the Uſe and Intent is, that one ſhould have it for his Life, and after his Deceaſe, a Stranger to have it in Tail, and then a third in Fee-ſimple: In this Caſe the Land ſettles in an Eſtate, according to the Uſe and Intent declared. And that by reaſon of the Statute made 27 *Hen.* VIII. conveying the Land in Poſſeſſion to him that has Intereſt in the Uſe, or Intent of the Fine, Feoffment, or Recovery; according to the Uſe and Intent of the Parties. Upon this Statute is likewiſe grounded the fourth and fifth of the ſix Conveyances; *viz.* Bargains, Sales, and Covenants, to ſtand ſeized to Uſes; for this Statute, whereever it finds an Uſe, conjoins the Poſſeſſion to it, and turns it into like Quality of Eſtate, Condition, Rent, and the like, as the Uſe has.

Uſe, what.

25. (4.) The Uſe is but the Equity and Honeſty to hold the Land *in conſcientia boni viri.* As for Example; I and you agree that I ſhall give you Money for your Land, and you ſhall make me Aſſurance of it. I pay you the Money; but you made me no Aſſurance of it. Here, altho the Eſtate of the Land be ſtill in you, yet the Equity and Honeſty to have it is with me; and this Equity is call'd the *Uſe:* upon which I had no Remedy but in Chancery, till this Statute was made of 27 *Hen.* VIII. and now this Statute conjoins and contains the Land to him that has the Uſe. I, for my Money paid to you, have the Land itſelf, without any other Conveyance from you; and it is call'd a Bargain and Sale.

26. But the Parliament which made that Statute, foreſaw it would be miſchievous that Mens Lands ſhould ſo ſuddenly, upon the Payment of a little Money, be convey'd from them, perhaps in an Ale-houſe, or a Tavern, upon ſtrainable Advantages; and therefore gravely provided another Act in the ſame Parliament, that the Land, upon Payment of this Money, ſhould not paſs away, except there were a Writing indented, made between the ſaid two Parties; and the ſaid Writing alſo, within ſix Months, enrolled in ſome of the Courts at *Weſtminſter*, or in the Seſſions Rolls in the Shire where the Land lies; unleſs it be in Cities or Corporate Towns, where they uſed to enroll Deeds; and there the Statute extends not.

Conveyance to ſtand ſeized to Uſes.

27. (5.) The *fifth Conveyance* of a Fine, is a Conveyance to ſtand ſeiz'd to Uſes: it is in this ſort. A Man has a Wife and Children, Brethren and Kinsfolks, may, by Writing under his Hand and Seal, agree, that for

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their, or any of their Preferment, he will ſtand ſeized of his Lands to their Uſes, either for Life in Tail or Fee; ſo as he ſhall ſee Cauſe: upon which Agreement in Writing, there ariſes an Equity or Honeſty, that the Land ſhould go according to thoſe Agreements; Nature and Reaſon allowing theſe Proviſions; which Equity and Honeſty is the *Uſe*. And the *Uſe* being created in this ſort; the Statute of 27 *Hen.* VIII. before-mentioned, conveys the Eſtate of the Land as the Uſe is appointed.

28. And ſo this *Covenant to ſtand ſeized to Uſes*, is at this day, ſince the ſaid Statute, a Conveyance of Land; and with this Difference from a Bargain and Sale, that this needs no Enrollment, as a Bargain and Sale does; nor needs it to be in Writing indented, as *Bargain and Sale* muſt: and if the Party, to whoſe Uſe he agrees to ſtand ſeized of the Land, be not Wife or Child, Couſin, or one that he means to marry, then will no Uſe riſe, and ſo no Conveyance; for altho the Law allow ſuch weighty Conſiderations of Marriage and Blood to raiſe Uſes; yet it admits not ſuch trifling Conſiderations, as of Acquaintance, Schooling, Services, or the like.

29. But where a Man makes an Eſtate of his Land to others, by Fine, Feoffment, or Recovery, he may then appoint the Uſe to whom he pleaſes, without reſpect of Marriage, Kindred, or other things; for in that Caſe his own Will and Declaration guides the Equity of the Eſtate. 'Tis not ſo when he makes no Eſtate, but agrees to ſtand ſeized; nor when he has taken any thing, as in the Caſes of Bargain, and Sale, and Covenant, to ſtand to Uſes.

Conveyance by Will in Writing.

30. (6.) The laſt of the *ſix Conveyances is a Will in Writing*; which Courſe of Conveyance was firſt ordain'd by a Statute made 32 *Hen.* VIII. before which Statute no Man might give Land by Will, except it were in a Borough Town, where there was an eſpecial Cuſtom, that Men might give their Lands by Will; as in *London*, and many other Places.

31. The not giving of Land by Will, was thought to be a Defect at Common Law, that Men in Wars, or ſuddenly falling ſick, had not Power to diſpoſe of their Lands, except they could make a Feoffment, or levy a Fine, or ſuffer a Recovery; which want of time would not permit: and for Men to do it by theſe means, when they could not undo it again, was hard: beſides, even to the laſt Hour of Death, Mens Minds might alter upon further Proofs of their Children or Kindred, or Increaſe of Children or Debt, or Defect of Servants or Friends to be altered. Whence it was reaſonable that the Law ſhould permit Men to reſerve to the laſt Inſtant, the diſpoſing of their Lands; and to give them Means to diſpoſe thereof: but that not ſuiting, Men uſed this Device.

32. They conveyed their full Eſtates of Lands, in their good Health, to Friends in Truſt, properly call'd Feoffees in Truſt; and then they would by their Wills declare how their Friends ſhould diſpoſe of their Lands: and if thoſe Friends would not perform it, the Court of Chancery was to compel them by reaſon of Truſt; and this Truſt was call'd the Uſe of the Land; ſo that the Feoffees had the Land, and the Party himſelf

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himſelf had the Uſe; which Uſe was in Equity, to take the Profits for himſelf; and that the Feoffees ſhould make ſuch an Eſtate as he ſhould appoint them; and if he appointed none, then the Uſe ſhould go to the Heir, as the Eſtate itſelf of the Land ſhould have done; for the Uſe was to the Eſtate like a Shadow following the Body.

33. By this Courſe of putting Lands into Uſe, there aroſe many Inconveniencies; *viz.* the giving Men Power and Liberty to diſpoſe of their own, was turned to deceive many of their juſt and reaſonable Rights; ſo that a Man who had Cauſe to ſue for his Land, knew not againſt whom to bring his Action, nor who was the Owner of it. The Wife was defrauded of her Thirds; the Huſband of being Tenant by Courteſy; the Lord of his Wardſhip, Relief, Heriot and Eſcheat; the Creditor of his Extent for Debt; the poor Tenant of his Leaſe: for theſe Rights and Duties were given, by Law, from him that was the Owner of the Land, and no other; which was now the Feoffee of Truſt; and ſo the old Owner, which we call the Feoffer, ſhould take the Profits, and leave the Power to diſpoſe of the Land, at his Diſcretion, to the Feoffee; and yet he was not ſuch a Tenant as to be ſeized of the Land, ſo as his Wife could have Dower; or the Lands be extended for his Debts; or that he could forfeit it for Felony or Treaſon; or that his Heir could be Ward for it, or any Duty of Tenure fall to the Lord by his Death; or that he could make any Leaſes of it. Which Frauds, by Degrees of time, as they increaſed, were remedied by diverſe Statutes. Theſe Frauds nevertheleſs multiplying daily, in the End, 27 *Hen.* VIII. the Parliament purpoſing to take away all thoſe Uſes, and reducing the Law to the ancient Form of conveying of Lands by publick Livery of Seiſin, Fine, and Recovery, ordained, that where the Lands were put in Truſt or Uſe, there the Poſſeſſion and Eſtate ſhould be preſently carried out of the Friends in Truſt, and ſettled and inveſted on him that had the Uſes, for ſuch Term and Time as he had the Uſe.

34. By this Statute of 27 *Hen.* VIII. the Power of diſpoſing Land by Will, is clearly taken away among thoſe Frauds; whereupon 32 *Hen.* VIII. another Statute was made to empower Men to give Lands by Will in this ſort. *Firſt*, it muſt be by Will in Writing. *Secondly*, he muſt be ſeized of an Eſtate in Fee-ſimple; for Tenant for another Man's Life, or Term in Tail, cannot give Land by Will; by that Statute 32 *Hen.* VIII. he muſt be ſolely ſeized; and not jointly with another; and then being thus ſeized for all the Land he holds in Soccage Tenure, he may give it by Will, except he hold any Piece of Land *in Capite* by Knight's-Service of the King; and then laying all together, he can give but two Parts by Will; for the third Part of the whole, as well in Soccage as *in Capite*, muſt deſcend to the Heir, to anſwer Wardſhip, Livery, and primer Seiſin to the Crown. And ſo if he hold Lands by Knight-Service of a Subject, he can deviſe of the Land but two Parts; and the third, the Lord by Wardſhip, and the Heir by Deſcent, is to hold.

35. And if a Man that has three Acres of Land held *in Capite* by Knight's-Service, do make a Jointure to his Wife of one, and convey another to any of his Children, or to Friends, to take the Profits, and to

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pay his Debts or Legacies, or Daughter's Portions, then the third Acre, or any part thereof, he cannot give by Will; but muſt ſuffer it to deſcend to the Heir, and that muſt ſatisfy Wardſhip. Yet a Man having three Acres as before, may convey all to his Wife or Children, by Conveyance in his Life-time, as by Feoffment, Fine, Recovery, Bargain and Sale, or Covenant to ſtand ſeized to Uſes, and to diſinherit the Heir. But if the Heir be within Age when his Father dies, the King, or other Ward, ſhall have that Heir in Ward; and ſhall have one of the three Acres during the Wardſhip, and to ſue Livery and Seiſin. But at full Age the Heir ſhall have no part of it; but it ſhall go according to the Conveyance made by the Father.

36. It has been debated how the Thirds ſhall be ſet forth. For it is the Uſe, that all Lands which the Father leaves to deſcend to the Heir, being Fee-ſimple, or in Tail, muſt be part of the Thirds; and if it be a full Third, then the King, nor Heir, nor Lord, can intermeddle with the reſt; if it be not a full Third, yet they muſt take it, ſo much as it is, and have a Supply out of the reſt. This Supply is to be taken thus: if it be the King's Ward, then by Commiſſion out of the Court of Wards; whereupon a Jury, by Oath, muſt ſet forth ſo much as he ſhall make up the Thirds; except the Officers of the Court of Wards can otherwiſe agree with the Parties. If there be no Wardſhip due to the King, then the other Lord is to have this Supply, by a Commiſſion out of the Chancery, and Jury thereupon.

37. But in all theſe Caſes, the Statutes give Power to take him that makes the Will, to ſet forth and appoint of himſelf, which Lands ſhall go for Thirds; and neither King nor Lord can refuſe it. And if it be not enough, yet they muſt take that in part, and only have a Supply in the manner before-mentioned, out of the reſt.

SECT. V.

Of PROPERTY *in* GOODS.

1. THE ſeveral Ways whereby a Man may get Property in Goods or Chattels, are, (1.) by *Gift*; (2.) by *Sale*; (3.) by *Stealing*; (4.) by *Waving*; (5.) by *Straying*; (6.) by *Shipwreck*; (7.) by *Forfeiture*; (8.) by *Executorſhip*; (9.) by *Adminiſtration*; and, (10.) by *Legacy*.

Property by Gift. 2. By Gift, the Property of Goods may be paſſed by Word or Writing; but if there be a general Deed of Gift made of all his Goods, this is ſuſpicious to be done upon Fraud, to deceive the Creditors.

3. And

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3. And if a Man who is in Debt make a Deed of Gift of all his Goods, to protract the taking of them in Execution for his Debt; this Deed of Gift is void, as againſt thoſe to whom he ſtood indebted; but as againſt himſelf, his own Executors or Adminiſtrators, or any Man to whom afterwards he ſhall ſell or convey them, it is good.

By Sale.

4. By Sale, any Man may convey his own Goods to another; and altho he may fear Execution for Debts, yet he may ſell them out-right for Money, at any time before the Execution ſerved; ſo that there be no Reſervation of Truſt between them; paying the Money, he ſhall have the Goods again; for that Truſt in ſuch Caſe, proves plainly a Fraud, to prevent the Creditors from taking the Goods in Execution.

By Theft, or taking in jeſt.

5. If any Man ſteal my Goods or Chattels, or take them from me in jeſt, or borrow them of me, or as a Treſpaſſer or Felon carry them to the Market or Fair, and ſell them; this Sale bars me of the Property of my Goods, ſaving, that if he be a Horſe, he muſt be ridden two Hours in the Market or Fair, between ten and five o'Clock, and toll'd for in the Toll-Book; and the Seller muſt bring one to avouch his Sale, known to the Toll-Book-Keeper, or elſe the Sale binds me not. And for any other Goods, where the Sale in a Market or Fair, ſhall bar the Owner, being not the Seller, of his Property, it muſt be Sale in a Market or Fair, where uſually things of that Nature are ſold. As for Example; if a Man ſteal a Horſe, and ſell him in *Smithfield*, the true Owner is barred by this Sale; but if he ſell the Horſe in *Cheapſide*, *Newgate*, or *Weſtminſter* Market, the true Owner is not barred by this Sale; becauſe theſe Markets are uſual for Fleſh, Fiſh, *&c.* and not for Horſes.

6. So whereas, by the Cuſtom of *London*, in every Shop there is a Market all the Days of the Week, ſaving *Sundays* and *Holidays*; yet if a Piece of Plate or Jewel that is loſt, or Chain of Gold or Pearl, that is ſtolen or borrowed, be ſold in a Draper's or Scrivener's Shop, or any other but a Goldſmith's, this Sale bars not the true Owner.

7. Yet by ſtealing alone of Goods, the Thief gets not ſuch Property, but that the Owner may ſeize them again wherever he finds them; except they were ſold in a Fair or Market, after they were ſtolen; and that, *bona fide*, without Fraud. But if the Thief be condemned of the Felony, or out-law'd for the ſame, or out-law'd in any perſonal Action, or have committed a Forfeiture of Goods to the Crown, then the true Owner is without Remedy.

8. Nevertheleſs, if freſh after the Goods were ſtolen, the true Owner make Purſuit after the Thief and Goods, and take the Goods with the Thief, he may take them again. And if he make no freſh Purſuit, yet if he proſecute the Felon, ſo far as Juſtice requires, that is, to have him arraign'd, indicted, and found guilty, (tho he be not hang'd, nor receive Judgment of Death,) or have him out-law'd upon the Indictment; in all theſe Caſes he ſhall have his Goods again, by a Writ of Reſtitution to the Party in whoſe Hands they are.

By waving of Goods.

9. By waving of Goods, a Property is gotten thus. A Thief having ſtolen Goods, being purſued, flies away and leaves the Goods: This Leaving

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ing is call'd Waving, and the Property is in the King; except the Lord of the Manor have a Right to it by Cuſtom or Charter. But if the Felon be indicted, adjudged, found guilty, or out-law'd, at the Suit of the Owner of theſe Goods, he ſhall have Reſtitution of the Goods as before.

By ſtraying. 10. By ſtraying, Property in live Cattel is thus got. When they come into other Mens Grounds, ſtraying from the Owners, the Party, or Lord, into whoſe Grounds or Manors they come, cauſes them to be ſeized, and a Wythe put about their Necks, and to be cried in three Markets adjoining, ſhewing the Marks of the Cattle: Which done, if the true Owner claim them not within a Year and a Day, then the Property of them is in the Lord of the Manor, whereto they ſtray'd; if he have all Strays by Cuſtom and Charter; elſe to the King.

Wreck. 11. By Shipwreck, Property of Goods is thus got. When a laden Ship is caſt away upon the Coaſts, ſo that no living Creature that was in it when it began to ſink, eſcaped to Land with Life; then all thoſe Goods are ſaid to be wreck'd, and they belong to the Crown, if they be found; except the Lord of the Soil adjoining can entitle himſelf to them by Cuſtom, or by the King's Charter.

Forfeitures. 12. By Forfeitures, Goods and Chattels are thus got. If the Owner be out-law'd; if he be indicted of Felony, or Treaſon; or either confeſs it, or be found guilty of it, or refuſe to be tried by Peers or Jury; or be attainted by Judgment, or fly for Felony; altho he be not guilty, or ſuffer the *Exigent* to go forth againſt him; altho he be not out-law'd, or that he go over the Seas without Licence, all the Goods he had at the Judgment, he forfeits to the Crown; except ſome Lord by Charter can claim them. For in thoſe Caſes Preſcript will not ſerve, except it be ſo ancient, that it has had Allowance before the Juſtices in *Eyre*, in their Circuits, or in the King's Bench, in ancient time.

By Executorſhip. 13. By Executorſhip, Goods are got, when a Man poſſeſſed of Goods makes his laſt Will and Teſtament in Writing, or by Word; and makes one or more Executors thereof: Theſe Executors have by the Will and Death of the Parties, all the Property of their Goods, Chattels, Leaſes for Years, Wardſhips and Extents; and all Right concerning thoſe things.

14. Theſe Executors may meddle with the Goods, and diſpoſe them before they prove the Will; but they cannot bring an Action for any Debt or Duty, before they have proved the Will.

Proving the Will. 15. The *proving of the Will is thus.* They are to exhibit the Will into the Biſhop's Court, and there they are to bring the Witneſſes to be ſworn, and the Biſhop's Officers are to keep the Will original, and certify the Copy thereof, in Parchment, under the Biſhop's Seal of the Office: which Parchment ſo ſealed, is called the *Will proved.*

By Letter of Adminiſtration. 16. By *Letters of Adminiſtration*, Property in Goods is thus got. When a Man poſſeſſed of Goods dies without any Will, ſuch Goods as the Executors ſhould have had, if he had made a Will, were by ancient Law to come

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come to the Biſhop of the Dioceſe, to diſpoſe for the Good of his Soul that died; he firſt paying his Funeral and Debts, and giving the reſt *ad pios uſus*.

17. This is is now altered by Statute Laws, ſo as that the Biſhops are to grant Letters of Adminiſtration of the Goods at this Day to the Wife, if ſhe require it, or Children, or next of kin: If they refuſe it, as they often do, becauſe the Debts are greater than the Eſtate will bear; then ſome Creditor, or ſome other will take it, as the Biſhop's Officers ſhall think meet.

18. It comes often in Queſtion what Biſhop has the Right of proving Wills, and granting Adminiſtration of Goods: in which Controverſy the Rule is, that if the Party deceaſed had at the time of his Death *Bona notabilia*, in diverſe Dioceſes, of ſome reaſonable Value; then the Archbiſhop of the Province where he died, is to have the *Probat* of his Will, and to grant the Adminiſtration of his Goods, as the Caſe falls out; otherwiſe the Biſhop of the Dioceſe where he died is to do it. *The Granting of Adminiſtration.*

19. If there be but one Executor made, yet he may refuſe the Executorſhip coming before the Biſhop; provided he has not intermeddled with any of the Goods before, or with receiving Debts, or paying Legacies.

20. And if there be more Executors than one, ſo many as pleaſe may refuſe; and if any one take it upon him, the reſt that did once refuſe, may, when they will, take it upon them; and no Executor ſhall be farther charged with the Debts or Legacies, than the Value of the Goods come to his Hands; provided he foreſee that he pay Debts upon Record, firſt Debts to the King, then upon Judgments, Statutes, Recognizances; then Debts by Bond and Bill ſealed, Rent unpayed, Servants Wages, Payment to head Workmen; and laſtly, Shop-Books, and Contracts by Word. For if an Executor or Adminiſtrator pay the Debts to others before the King, or Debts due by Bond before thoſe due by Record, or Debts by Shop-Books, and Contracts before thoſe by Bond, Arrearages of Rent, and Servants or Workmen's Wages, he ſhall pay the ſame over again to thoſe others in the ſaid Degrees. Yet the Law gives them choice, that where diverſe have Debts due in equal Degree of Record or Speciality, he may pay which of them he will, before any Suit brought againſt him; but if Suit be brought, he muſt firſt pay them that get Judgment againſt him. *How Executors are to proceed.*

21. Any one Executor may convey the Goods, or releaſe Debts without his Companion; and any one by himſelf may do as much as all together; but one Man's releaſing of Debts, or ſelling of Goods, ſhall not charge the other to pay ſo much of the Goods, if there be not enough to pay Debts; but it ſhall charge the Party himſelf that did ſo releaſe or convey.

22. But it is not ſo with Adminiſtrators: for they have but one Authority given them by the Biſhop over the Goods; which Authority being given to many, is to be executed by all of them join'd together. And if *How Adminiſtrators.*

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an Executor die, making an Executor, the ſecond Executor is Executor to the firſt Teſtator.

Ordinary, *what.*

23. But if an Adminiſtrator die inteſtate, then his Adminiſtrator ſhall not be Executor or Adminiſtrator to the firſt; but in that Caſe the Biſhop, whom we call the *Ordinary*, is to commit the Adminiſtration of the firſt Teſtator's Goods to his Wife, or next of kin, as if he had died inteſtate; always provided, that what the Executor did in his Life-time, is to be allowed for Good. And ſo if an Adminiſtrator die, and make his Executor, the Executor of the Adminiſtrator ſhall not be Executor to the firſt Inteſtate; but the *Ordinary* muſt now commit the Adminiſtration of the Goods of the firſt Inteſtate again.

24. If the Executor or Adminiſtrator pay Debts, or Funerals, or Legacies of his own Money; he may retain ſo much of the Goods in kind, of the Teſtator or Inteſtate, and ſhall have Property of it in kind.

Property by Legacy.

25. Property by Legacy, is where a Man makes a Will and Executors, and gives Legacies; he or they to whom the Legacies are given, muſt have the Aſſent of the Executors, or one of them, to have his Legacy; and the Property of that Legacy, or other Goods bequeathed to him, is ſaid to be in him; but he may not enter, nor take his Legacy without the Aſſent of the Executors, or one of them; becauſe the Executors are charged to pay Debts before Legacies. And if one of them aſſent to pay Legacies, he ſhall pay the Value thereof out of his own Purſe; if there be not otherwiſe ſufficient to pay Debts.

26. But this is to be underſtood by Debts of Record to the King, or by Bill and Bond ſealed, as Arrearages of Rent, or Servants or Workmens Wages, and not Debts of Shop-Books, or Bills unſealed, or Contract by Word; for Legacies are to be paid before them.

27. And if the Executors doubt that they ſhall not have enough to pay every Legacy, they may pay which they pleaſe firſt; but they may not ſell any ſpecial Legacy, as they pleaſe, to pay Debts, or a Leaſe of Goods to pay a Money Legacy: But they may ſell any Legacy they will to pay Debts, if they have not enough beſides.

28. If a Man make a Will, and leave no Executors, or if the Executors refuſe, the *Ordinary* is to commit Adminiſtration, *cum Teſtamento annexo*, and take Bonds of the Adminiſtrator to perform the Will; and he is to do it in ſuch a ſort, as the Executor ſhould have done, if he had been named.

SECT.

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SECT. VI.

CASES *of* TREASON; *with the* TRIAL, PENALTIES, *and* PROCEEDINGS *therein.*

1. WHERE a Man compaſſes or imagines the Death of the King, the King's Wife, the King's eldeſt Son, and Heir apparent; if it appear by an Overt-act, it is Treaſon. *Caſes of Treaſon.*

2. Where a Man violates the King's Wife, the King's eldeſt Daughter unmarried, the Wife of the King's eldeſt Son, and Heir apparent, it is Treaſon.

3. Where a Man levies War againſt the King in the Realm, it is Treaſon.

4. Where a Man is adherent to the King's Enemies, giving them Aid and Comfort, it is Treaſon.

5. Where a Man counterfeits the King's Great Seal, Privy Signet, or Sign Manual, it is Treaſon.

6. Where a Man brings into this Realm falſe Money, counterfeited to the Likeneſs of *Engliſh*, with an Intent to merchandize, or make Payment thereof, and knowing it to be falſe Money, it is Treaſon.

7. Where a Man counterfeits any Coin, current in Payment within this Realm, it is Treaſon.

8. Where a Man brings in any Money, being current, within the Realm, the ſame being falſe and counterfeit, with an Intent to utter it, and knowing the ſame to be falſe, it is Treaſon.

9. Where a Man clips, waſtes, rounds, or files, any of the King's Money, or any foreign Coin, current by Proclamation, for Gain's-ſake, it is Treaſon.

10. Where a Man any way impairs, diminiſhes, falſifies, ſcales, or lightens Money current by Proclamation, it is Treaſon.

11. Where a Man kills the Chancellor, the Treaſurer, the King's Juſtices in Eyre, the King's Juſtices of Aſſizes, the Juſtices of *Oyer* and *Terminer*, being in their ſeveral Places, and doing their Offices, it is Treaſon.

12. Where a Man procures, or conſents to Treaſon, it is Treaſon.

13. Where a Man perſuades or withdraws any of the King's Subjects from their Obedience, or from the Religion eſtabliſhed by his Majeſty, with an Intent to draw any from the King's Obedience, it is Treaſon.

14. Where a Man is abſolved, reconciled, or withdrawn from his Obedience to the King, or promiſes Obedience to any foreign Power, it is Treaſon.

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15. Where any Jeſuit, or any other Prieſt, ordain'd ſince the firſt Year of the Reign of Queen *Elizabeth*, ſhall come into, or remain in any part of the Realm, it is Treaſon.

16. When any Perſon being brought up in a College of Jeſuits, or Seminary, ſhall not return within ſix Months after Proclamation made, and within two Days after his Return, ſubmit himſelf to take the Oath of Supremacy; if otherwiſe he do return, and within ſix Months after Proclamation made, it is Treaſon.

17. Where a Man committed for Treaſon, voluntarily breaks Priſon, it is Treaſon.

18. Where a Jailor voluntarily permits a Man committed for Treaſon to eſcape, it is Treaſon.

19. Where a Man relieves, or comforts a Traitor, and knows of the Offence, it is Treaſon.

20. Where a Man affirms, or maintains any Authority of Juriſdiction ſpiritual, or puts in Uſe, or executes any thing for the Advancement or ſetting forth thereof, the third time, it is Treaſon.

21. Where a Man refuſes to take the Oath of Supremacy, being tendered by the Biſhop of the Dioceſe, if he be any eccleſiaſtical Perſon; or by Commiſſion out of the Chancery, if he be a temporal Perſon; ſuch Offence, the ſecond time, is Treaſon.

The Puniſhments and Proceedings in Treaſon.

22. In Treaſon, the corporal Puniſhment is by drawing on a Hurdle, from the Place of Priſon, to the Place of Execution, by hanging, and being cut down alive, bowelling and quartering; and in Women, burning.

23. In Treaſon, here enſues a Corruption of Blood in the Line aſcending and deſcending.

24. In Treaſon, Lands and Goods are forfeited, and Inheritances, as well entailed, as Fee-ſimple, and the Profits of Eſtates for Life.

25. In Treaſon, the Eſcheats go to the King, and not to the Lord of the Fee.

26. In Treaſon, the Land forfeited ſhall be in the King's actual Poſſeſſion, without Office.

27. In Treaſon, there are no Acceſſaries, but all are Principals.

28. In Treaſon, no Sanctuary, nor Benefit of Clergy, or peremptory Challenge is allowed.

29. In Treaſon, if the Party ſtand mute, yet Judgment and Attainder ſhall proceed all one as upon Verdict.

30. In Treaſon, no Counſel is to be allowed; nor Bail permitted to the Party.

31. In Treaſon, no Witneſs ſhall be received upon Oath, for the Parties Juſtification.

32. In Treaſon, if the Fact be committed beyond the Seas, yet it may be tried in any County where the King will award his Commiſſion.

33. In Treaſon, if the Party be *non ſanæ memoriæ*, yet if he had formerly confeſſed it before the King's Council, and that it be certified he was of

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of good Memory at the time of his Examination and Confeſſion; the Court may proceed to Judgment, without calling or arraigning the Party.

34. In Treaſon, the Death of the Party before Conviction, diſcharges all Proceedings and Forfeitures.

35. In Treaſon, if the Party be once acquitted, he ſhould not be brought again in queſtion for the ſame Fact.

36. In Treaſon, no new Caſe, not expreſſed in the Statute of 25 *Eliz.* 3. or made Treaſon by any ſpecial Statute ſince, ought to be judged Treaſon, without conſulting the Parliament.

37. In Treaſon, there can be no Proſecution but at the King's Suit; and the King's Pardon diſcharges.

38. In Treaſon, the King cannot grant over to any Subject, Power, and Authority, to pardon it.

39. In Treaſon, a Trial of a Peer of the Kingdom is to be by ſpecial Commiſſion, before the Lord High-Steward; and thoſe that paſs upon him to be none but Peers. The Proceeding is with great Solemnity; the Lord-Steward ſitting under a Cloth of State, with a white Rod of Juſtice in his Hand; and the Peers may confer together, but are not any ways ſhut up; and are demanded by the Lord-Steward, their Voices one by one: and the Plurality of Voices carries it.

40. It has been an ancient Uſe and Favour from the Kings of the Realm, to pardon the Execution of Hanging, Drawing, and Quartering; and to make Warrant for their Beheading.

41. The Proceeding in Caſe of Treaſon, with a common Subject, is in the King's Bench, or by Commiſſion of *Oyer* and *Terminer*.

Miſpriſon of Treaſon.

42. Where a Man only conceals High-Treaſon, without any conſorting or abetting, it is Miſpriſon of Treaſon.

43. Where a Man counterfeits any foreign Coin of Gold or Silver, not current in the Realm, it is Miſpriſon of Treaſon.

44. Where a Man fixes an old Seal to a new Patent, it is Miſpriſon of Treaſon.

Puniſhment and Proceedings in Miſpriſon of Treaſon.

45. The Puniſhment of Miſpriſon of Treaſon is by perpetual Impriſonment, Loſs of the Iſſues and Profits of Lands during Life; and the Loſs of Goods and Chattels.

46. The Proceeding and Trial is as in Caſes of High-Treaſon.

47. In Miſpriſon of Treaſon, Bail is not admitted.

Petty-Treaſon.

48. Where a Servant kills his Maſter, the Wife her Huſband, the ſpiritual Man his Prelate, to whom he is ſubordinate, and owes Faith and Obedience, it is Petty-Treaſon.

49. Where a Son kills his Father or Mother, it has been queſtioned whether it be Petty-Treaſon; and the late Experience and Opinion ſeems to ſway to the contrary, tho againſt Law and Reaſon, in my Judgment.

50. Where a Servant kills a Maſter or Miſtreſs, after being put out of Service, it is Petty-Treaſon.

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Punishment and Proceedings in Petty-Treason.

51. In Petty-Treason, the corporal Punishment is by drawing on a Hurdle, and hanging; and in a Woman, burning.

52. In Petty-Treason, the Forfeiture is the same as in Case of Felony.

53. In Petty-Treason, all Accessaries are but as in Case of Felony.

SECT. VII.

CASES *of* FELONY; *with the* TRIAL, PUNISHMENT, *and* PROCEEDINGS *therein.*

Cases of Felony.

1. WHERE a Man commits Murder, or Homicide, of Malice *prepense*, it is Felony.

2. Where a Man commits Murder in breaking of a House, with an Intent to commit Felony, it is Felony.

3. Where a Man commits Man-slaughter, that is, Homicide of sudden Heat, and not of Malice prepense, it is Felony.

4. Where a Man rides armed with a felonious Intent, it is Felony.

5. Where a Man maliciously and feloniously burns any Man's House, it is Felony.

6. Where a Man maliciously burns Corn upon the Ground, or in the Stack, it is Felony.

7. Where a Man maliciously cuts out another's Tongue, or puts out his Eyes, it is Felony.

8. Where a Man robs or steals, that is, takes away another Man's Goods, to above the Value of 12 *d.* out of his Possession, with an Intent to conceal the same, it is Felony.

9. Where a Man embezzels and withdraws the King's Records at *Westminster*, whereby a Judgment is reversed, it is Felony.

10. Where a Man having the Custody of the Knights Armour, Munition, or other Habiliments of War, maliciously conveys away the same, it is Felony; if it be to the Value of twenty Shillings.

11. Where a Servant has Goods of his Master delivered to him, and goes away with the same, it is Felony.

12. Where a Man conjures or invokes wicked Spirits, it is Felony.

13. Where a Man uses or practises Witchcraft, whereby any Person shall be killed, wasted, or lamed, it is Felony.

14. Where a Man practises any Witchcraft, to discover Treasure hid, or to discover stolen Goods, or to provoke unlawful Love, or to impair or hurt any Man's Cattle or Goods, the second time, having been once before convicted of the like Offence, it is Felony.

15. Where

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15. Where a Man uſes the Craft of Multiplication of Gold, or Silver, it is Felony [a].

16. Where a Man receives a ſeminary Prieſt, knowing him to be ſuch, it is Felony.

17. Where a Man takes away a Woman againſt her Will, not claiming her as his Ward, or Bond-Woman, it is Felony.

18. Where a Man or Woman marries again, a former Huſband or Wife being alive, it is Felony.

19. Where a Man commits Buggery with a Man or Beaſt, it is Felony.

20. Where any Perſons, above the Number of twelve, ſhall aſſemble themſelves with an Intent to put down Incloſures, or bring down the Prices of Victuals, and do not depart after Proclamation, it is Felony.

21. Where a Man ſhall uſe any Words to encourage, or draw People together, as above, and they aſſemble accordingly, and do not depart after Proclamation, it is Felony.

22. Where a Man, being the King's ſworn Servant, conſpires to murder any Lord of the Realm, or any Privy-Counſellor, it is Felony.

23. Where a Recuſant, which is a Seducer, Perſuader, and Inciter of the King's Subjects againſt the King's Authority, in eccleſiaſtical Cauſes, or a Perſuader of Conventicles, ſhall refuſe to abjure the Realm, it is Felony.

24. Where Vagabonds are found in the Realm, calling themſelves *Egyptians*, it is Felony.

25. Where a Purveyor takes without Warrant, or otherwiſe offends againſt certain ſpecial Laws, it is Felony.

26. Where a Man hunts in any Foreſt, Park, or Warren, by Night or by Day, with Vizard or Diſguiſe, and is examined thereof, and conceals his Fact, it is Felony.

27. Where any one ſteals certain Kinds of Hawks, it is Felony.

28. Where a Man commits Forgery the ſecond time, having been once before convicted, it is Felony.

29. Where a Man, being impriſoned, breaks Priſon, it is Felony.

30. Where a Man procures or conſents to Felony, it is Felony; ſo as to make him acceſſary before the Fact.

31. Where a Man receives or relieves a Felon, it is Felony; ſo as to make him acceſſary after the Fact.

32. Where a Woman, by Conſtraint of her Huſband, in his Preſence, joins with him in committing of Felony, it is not Felony in her, either as Principal, or as Acceſſary.

33. Homicide, or the killing of a Man, is to be conſidered in four kinds; *viz.* (1.) Chance-Medley. (2.) *Se defendendo*. (3.) Man-ſlaughter. (4.) Wilful Murder.

34. In Felony, the corporal Puniſhment is hanging; and it is doubtful whether the King may turn it into beheading in the Caſe of a Peer, or other Perſon of Dignity; becauſe in Treaſon the ſtriking off the Head is Part of

Puniſhment of Felony.

[a] This was repealed by the Interceſſion of Mr. *Boyle*.

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of the Judgment; and ſo the King pardons the reſt: but in Felony, it is no Part of the Judgment, and the King cannot alter the Execution of the Law; yet Precedents have been both Ways: if it be upon Indictment, the King may; but upon an Appeal, he cannot.

35. In Felony, there follows Corruption of Blood, except it be in Caſes made Felony by ſpecial Statutes; with a Proviſo that there ſhall be no Corruption of Blood.

36. In Felony, Lands, in Fee-ſimple, and Goods and Chattels are forfeited, and the Profits of Eſtates for Life, but not Lands entail'd: and by ſome Cuſtoms, Lands in Fee-ſimple are not ſo forfeited. *The Father to the Bough, the Son to the Plough*, as in *Gavelkind*, in *Kent*, and other Places.

37. In Felony, the Eſcheats go to the Lord of the Fee, and not to the King; except he be Lord: but Profits for the Eſtates for Lives, or in Tail, during the Life of Tenant in Tail, go to the King; and the King has likewiſe *annum, & diem, & vaſtum.*

38. In Felony, Lands are not in the King before Office, nor in the Lord before Entry or Recovery, in a Writ of Eſcheat, or Death of the Party attainted.

39. In Felony, there can be no Proceeding with the Acceſſary, before there is a Proceeding with the Principal: if he die, or plead his Pardon, or have his Clergy before Attainder, the Acceſſary can never be dealt with.

40. In Felony, if the Party ſtand mute, and will not put himſelf upon Trial, or challenge peremptorily above that the Law allows, he ſhall have Judgment, not of hanging, but of preſſing to Death; but there he ſaves his Lands, and forfeits only his Goods.

41. In Felony, at the Common Law, the Benefit of the Clergy, or Sanctuary, was allowed; but now, by Statute, it is taken away in moſt Caſes.

42. In Felony, Bail may be admitted where the Fact is not notorious, and the Perſon not of an ill Name.

43. In Felony, no Council is to be allowed the Party; no more than in Treaſon.

44. In Felony, if the Fact be committed beyond the Seas, or upon the Seas, *ſuper altum mare*, there is no Trial at all in one Caſe, nor by Courſe of Jury in the other, but by the Juriſdiction of the Admiralty.

45. In Felony, no Witneſs ſhall be received upon Oath for the Party's Juſtification, no more than in Treaſon.

46. In Felony, if the Party be *non ſanæ memoriæ*, altho it be after the Fact, he cannot be tried nor adjudged, except it be in Courſe of Outlawry; and that is alſo erroneous.

47. In Felony, the Death of the Party before Conviction diſcharges all Proceedings and Forfeitures.

48. In Felony, if the Party be once acquitted, or in Peril of Judgment of Life lawfully, he ſhall never be brought in queſtion again for the ſame Fact.

49. In

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49. In Felony, the Profecution may be either at the King's Suit, or by way of Appeal; the Defendant having his Courſe, and producing Witneſſes upon Oath, as in Civil Cauſes.

50. In Felony, the King may grant Hault-juſtice to a Subject, with the Regality of Power to pardon it.

51. In Felony, the Trial of Peers is all one as in Caſe of Treaſon.

52. In Felony, the Proceedings are in the King's Bench, or before the Commiſſioners of *Oyer* and *Terminer*, or of Goal-delivery; and in ſome Caſes before the Juſtices of the Peace.

53. In the Civil and other Laws, they make a Difference in Caſes of Felony *de ſe*; for where a Man is call'd in Queſtion upon any capital Crime, and kills himſelf to prevent the Law; there they give the Judgment in all Points of Forfeiture, as if he had been attainted in his Life-time: and on the other ſide, where a Man kills himſelf upon Impatience of Sickneſs, or the like, they do not puniſh it at all: but the Law of *England* takes it all in one Degree, and puniſhes only with the Loſs of Goods to be forfeited to the King, who generally grants them to his Almoner, where they are not formerly granted to ſpecial Liberties. *Felony de ſe, with the Puniſhment and Proceedings.*

54. Where a Man purchaſes or accepts any Proviſion, that is, Collation of any ſpiritual Benefice, or Living, from the See of *Rome*, it is *Præmunire*. *Caſes of* Præmunire.

55. Where a Man ſhall purchaſe any Proceſs, to draw People off the King's Allegiance out of the Realm, in Plea whereof the Cognizance pertains to the King's Court, and comes not in Perſon to anſwer his Contempt in that Behalf, before the King and his Council, or in his Chancery, it is *Præmunire*.

56. Where a Man ſues in any Court, which is not the King's Court, to defeat or impeach any Judgment given in the King's Court, and appears not to anſwer his Contempt, it is *Præmunire*.

57. Where a Man purchaſes, or purſues in the Court of *Rome*, or elſewhere, any Proceſs, Sentence of Excommunication, Bull, or Inſtrument, or other thing which touches the King in his Regality, or his Realm in Prejudice, it is *Præmunire*.

58. Where a Man maintains or affirms any foreign kind of Juriſdiction ſpiritual, or puts in Uſe or Execution, any thing for the Advancement or ſetting forth thereof; ſuch Offence, the ſecond time committed, is *Præmunire*.

59. Where a Man refuſes to take the Oath of Supremacy, being tendered by the Biſhop of the Dioceſs, if it be an eccleſiaſtical Perſon; or by a Commiſſion out of the Chancery, if it be a temporal Perſon; it is *Præmunire*.

60. Where a Dean and Chapter of any Church, upon the *Conge d'ſlire* of an Archbiſhop, or Biſhop, refuſe to elect any ſuch Archbiſhop or Biſhop nominated to them in the King's Letters Miſſive, it is *Præmunire*.

61. Where

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61. Where a Man contributes, or gives Relief to any Jeſuit or Seminary Prieſts, or to any Perſon brought up among them, and call'd home, and not returning, it is *Præmunire*.

62. Where a Man is a Broker of an uſurious Contract, above ten in the hundred, it is *Præmunire*.

The Puniſhment and Proceedings in Caſes of Præmunire.

63. The Puniſhment in Caſes of *Præmunire*, is by Impriſonment during Life, Forfeiture of Goods, Forfeiture of Lands in Fee-ſimple, and Forfeiture of the Profits of Lands entail'd, or for Life.

64. The Trial and Proceeding is the ſame as in Caſes of Miſpriſon of Treaſon; and the Trial is by Peers, where a Peer of the Realm is the Offender.

65. Striking any Man in the Face of the King's Courts, is Forfeiture of Land, perpetual Impriſonment, and Loſs of that Land.

Caſes of Abjuration and Exile, with the Proceedings thereon.

66. Where a Man commits any Felony, for which at this Day he may have Privilege of Sanctuary, and confeſſes the Felony before the Coroner, he ſhall abjure the Liberty of the Realm, and chooſe his Sanctuary; and if he commit any new Offence, or leave his Sanctuary, he ſhall loſe the Privilege thereof, and ſuffer as if he had not taken Sanctuary.

67. Where a Man, not coming to the Church, and being a Popiſh Recuſant, perſuades any the King's Subjects to impung his Majeſty's Authority in Cauſes eccleſiaſtical, or ſhall perſuade any Subject to come to any unlawful Conventicle, and ſhall not after conform himſelf within a time, and make his Submiſſion, he ſhall abjure the Realm, and forfeit his Goods and Lands during Life; and if he depart not within the time prefixed, or return, he ſhall be in the Degree of a Felon.

68. Where a Man, being a Popiſh Recuſant, and not having Lands to the Value of twenty Marks *per annum*, nor Goods to the Value of 40 *l.* ſhall not repair to his Dwelling, or Place where he was born, and there confine himſelf within the Compaſs of five Miles, he ſhall abjure the Realm; and if he return, he ſhall be in the Caſe of a Felon.

69. Where a Man kills the King's Deer in Chaſes or Foreſts, and can find no Sureties after a Year's Impriſonment, he ſhall abjure the Realm.

70. Where a Man is a Treſpaſſer in Parks, or in Ponds of Fiſh, and after three Years Impriſonment cannot find Sureties, he ſhall abjure the Realm.

71. Where a Man is a Raviſher of any Child, whoſe Marriage belongs to any Perſon, and marries the ſaid Child after Years of Conſent, and is not able to ſatisfy for the Marriage, he ſhall abjure the Realm.

Caſes of Hereſy, and the Proceedings thereon.

72. The Declaration of Hereſy, and likewiſe the Proceedings and Judgment upon Hereticks, is by the Common Laws of this Realm referred to the Juriſdiction eccleſiaſtical; and the ſecular Arm is reached to them by the Common Laws, and not by any Statute for the Execution of them by the King's Writ *de Hæretico comburendo*.

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SECT. VIII.

The PREROGATIVES *of the* CROWN.

The King's Prerogative in Parliament.

1. THE King has an abſolute negative Voice to all Bills that paſs the Parliament; ſo that without his royal Aſſent, they have a mere Nullity, and not ſo much as the *Authoritas præſcripta*, or *Senatûs Conſulta* had, notwithſtanding the Interceſſion of the Tribunes.

2. The King may ſummon Parliaments, diſſolve them, prorogue them, and adjourn them, at his Pleaſure.

3. The King may add Voices in the Parliament at his Pleaſure; for he may give Privilege to Borough-Towns, as many as he will; and may likewiſe call and create Barons, at his Pleaſure.

4. No Man can ſit in Parliament, except he take the Oath of Allegiance.

In Matters of Peace and War.

5. The King has Power to declare and proclaim War; and to make and conclude Peace and Truce, at his Pleaſure.

6. The King has Power to make Leagues and Confederacies with foreign States, more ſtrict and leſs ſtrict; and to revoke and diſannul them, at his Pleaſure.

7. The King has Power to command the Bodies of his Subjects for the Service of his Wars; and to muſter, train, and levy Men; and to tranſport them by Sea or Land, at his Pleaſure.

8. The King has Power, in time of War, to execute martial Law, and to appoint all Officers of War, at his Pleaſure.

9. The King has Power to grant his Letters of Mart, and Repriſal, for Remedy to his Subjects upon foreign Wrongs, at his Pleaſure.

10. The King has Power to declare Laws, by his Letters Patent, for the Government of any Place, conquered by his Arms, at his Pleaſure.

11. The King may give Knight-hood; and thereby enable any Subject to perform Knight's-Service, at his Pleaſure.

In Matters of Money.

12. The King may alter his Standard, in Baſeneſs or Fineneſs of Coin, at his Pleaſure.

13. The King may alter his Stamp, in form, at his Pleaſure.

14. The King may alter the Valuations of his Coin; and raiſe and fall Money, at his Pleaſure.

15. The King, by his Proclamation, may make Money of his own current, or not current, at his Pleaſure.

16. The King may take or refuſe the Subjects Bullion; and coin more or leſs Money.

17. The King, by his Proclamation, may make foreign Money current or not current.

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In Matters of Trade and Traffick.

18. The King may reſtrain the Perſon of any of his Subjects not to go out of the Realm.

19. The King may conſtrain any of his Subjects to go out of the Realm, into any foreign Parts.

20. The King may forbid the Exportation of any Commodities out of the Realm.

21. The King may forbid the Importation of any Commodities into the Realm.

22. The King may ſet a reaſonable Impoſt upon any foreign Wares that come into the Realm; and ſo of native Wares that go out of the Realm.

In the Perſons of his Subjects.

23. The King may create any Corporation or Body politic, and enable them to purchaſe, grant, ſue, and be ſued; and that with ſuch Reſtriction and Modification as he pleaſes.

24. The King may denizon and enable any Foreigner, for him and his Deſcendants after the Charter; tho he cannot naturalize, nor enable him to make Pedigree from Anceſtors Paramount.

25. The King may enable any attainted Perſon, by his Charter of Pardon, to purchaſe, and to purge his Blood, for the time to come; tho he cannot reſtore his Blood for the time paſt.

26. The King may enable any Perſons dead in Law, as Men profeſſed, to take and purchaſe to the King's Benefit.

SECT. IX.

Of the NATURE *and* OFFICE *of* GRAND-JURIES; *particularly the* JURY *of the* VERGE.

The Office of Grand Juries.

1. IT is the happy State of the Subject of *England*, not to be impeached in his Life, Lands, or Goods, by flying Rumours, wandring Fames and Reports, or ſecret and private Inquiſitions; but by the Oath and Preſentment of Men of honeſt Condition, in the Face of Juſtice. But this happy State of the Subject will turn to Inconvenience, if *Grand Juries* ſhall be negligent, or remiſs, in their Duty: For as of the two Evils it were better that Mens Actions ſhould be ſeverely examined, than that there ſhould be a notorious Impunity of Malefactors; or as it was juſtly ſaid, it were better living where nothing is lawful, than where all things are lawful; it is the Office of *Grand Juries* to diſcover and proſecute Offences: For it is with them that Juſtice begins. And the Law cannot purſue and chaſe Offenders to their deſerved Fall, unleſs theſe Juries put them up and diſcover them; whereby they may be brought to anſwer.

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ſwer. For the Juries Verdict is concluding to condemn: But it is firſt neceſſary to charge; and without it the Court cannot proceed to condemn.

Particular Office of the Jury of the Verge.

2. Conſidering, therefore, that they are the Eye of Juſtice, they ought to be ſingle, without partial Affection; watchful, not aſleep, nor falſe aſleep, winking at Offenders: and they ought to be ſharp-ſighted, to proceed with Underſtanding and Diſcretion. For if they ſhall not preſent to the Court all ſuch Offences, as ſhall appear to them, either by Evidence given in, or otherwiſe of their own Knowledge, to have been committed within the Verge; which is, as it were, the Limits of their Survey; but ſhall ſmother and conceal any Offence willingly; then the Guilt of others will cleave to their Conſciences before God: and beſides, they are anſwerable, in ſome Degree, to the King and his Law, for ſuch their Default and Suppreſſion. But there is a greater Reaſon why they ſhould take more eſpecial Regard to their Preſentments, than other Grand Juries within the Counties of *England* at large; for as it is a nearer Degree and Approach to the King, who is the Fountain of Juſtice and Government, to be the King's Servant, than to be the King's Subject; ſo this Commiſſion, ordained for the King's Servants and Houſhold, ought, in the Execution of Juſtice, to be exemplary to other Places. *David* (who was a King) ſaith, *The wicked Man ſhall not abide in my Houſe*; as well obſerving, that tho it was impoſſible for Kings to baniſh Wickedneſs, by extending their utmoſt Power and Care over all their Land, or Empire; yet, at leaſt, they ought to undertake to God for their own Houſe.

The Verge, what.

3. The Law ſo eſteems the Dignity of the King's ſettled Manſion-Houſe, that it has laid to it a Plot of twelve Miles round, which we call the *Verge*, ſubject to a ſpecial exempted Juriſdiction, depending upon his Perſon and great Officers. This is as a *Half-Pace*, or *Carpet*, ſpread about the King's Chair of State; which therefore ought to be cleared and void, more than other Places of the Kingdom: for if Offences ſhall be ſhrouded under the King's Wings, what Hope is there of Diſcipline and Juſtice in the more remote Parts? When the Sun is at the brighteſt, there may perhaps be a Bank of Clouds in the North, or the Weſt, or remote Regions; but near his Body few or none: for where the King comes, there ſhould come Peace and Order, and an Awe and Reverence in Mens Hearts.

How regulated anciently.

4. And this Juriſdiction was in ancient time executed, and ſince by Statutes ratified, by the *Lord Steward*, with great Ceremony, in the Nature of a *peculiar King's Bench* for the *Verge*; for it was thought a kind of eclipſing to the King's Honour, that where the King was, any Juſtice ſhould be ſought, but immediately from his own Officers. But in reſpect that Office was often void, this Commiſſion has ſucceeded: which Change, tho it hath leſs State, yet it has more Strength legally; whence Juries of the Verge are to leave and give a Pattern to others, in the Care and Conſcience of their Preſentments.

The Offences to be preſented.

5. The Offences to be preſented are of four kinds.

(1.) The firſt, ſuch as concern God and his Church.

(2.) The ſecond, ſuch as concern the King and his State.

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(3.) The third, ſuch as concern the King's People, and are capital.
(4.) The fourth, ſuch as concern the King's People, and are not capital.

Regard God and the Church.

6. (1.) The Service of Almighty God, upon whoſe Bleſſing the Peace, Safety, and good Eſtate of the King and Kingdom depends, may be violated, and God diſhonoured, in three manners; *viz.* (1.) by Profanation; (2.) by Contempt; and, (3.) by Diviſion, or Breach of Unity.

Profanation.

7. Firſt, if any Man has depraved or abuſed, in Word or Deed, the bleſſed Sacrament, or diſturbed the Preacher, or Congregation, in the time of divine Service; or if any have malicioufly ſtricken with Weapon, or drawn a Weapon in any Church or Church-yard; or if any Fair or Market have been kept in any Church-yard; theſe are Profanations within the Purview of ſeveral Statutes; and theſe the Juries are to preſent: for holy Things, Actions, Times, and ſacred Places, are to be preferred in Reverence and divine Reſpect.

Contempts of the Church.

8. For Contempts of our Church and Service, they are comprehended in that known Name, which too many bear, *Recuſancy:* which Offence has many Branches and Dependencies: the Wife-Recuſant tempts; the Church-Papiſt feeds and relieves; the corrupt Schoolmaſter ſows Tares; the Diſſembler conforms, and does not communicate.

9. Therefore, if any Perſon, Man or Woman, Wife or Soul, above the Age of ſixteen Years, not having ſome lawful Excuſe, have not repaired to Church according to the ſeveral Statutes; the one for the weekly, the other for the monthly Repair; both the Offence, and the time how long, are to be preſented.

10. Again, ſuch as maintain, relieve, or keep Recuſants in Service of Livery, tho themſelves be none, are alſo to be preſented; for theſe are like the Roots of Nettles, which ſting not themſelves, but bear and maintain the ſtinging Leaves. Underſtand the ſame if any one keeps a Schoolmaſter, who comes not to Church, or is not allowed by the Biſhop; and ſo of ſuch Recuſants as have been convicted and have conformed, yet do not receive the Sacrament once a Year; for that is the Touchſtone of their true Converſion: and of theſe Offences of Recuſants, eſpecial Regard is to be taken. Twelve Miles from Court is no Region for ſuch Subjects. Why ſhould not twelve Miles about the King's Chair be as free from Papiſt Recuſants, as twelve Miles from the City of *Rome*, the Pope's Chair, is from Proteſtants? There may be Hypocrites and Atheiſts; but no open Contempt of their Religion is endured.

Diviſions and Breach of Unity.

11. For Matter of Diviſion and *Breach of Unity*; it is not without a Myſtery that Chriſt's Coat had no Seam: no more ſhould the Church, if it were poſſible. Therefore if any Miniſter refuſes the Book of Common-Prayer, or wilfully ſwerveth in divine Service from that Book; or if any Perſon whatſoever do ſcandalize that Book, and ſpeak openly and maliciouſly in Derogation of it; ſuch Men do but make a Rent in the Garment; and ſuch are to be enquired of. But much more ſuch as are not only

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only differing, but in a manner oppoſite to it; by uſing a ſuperſtitious and corrupt Form of divine Service; I mean ſuch as ſay or hear Maſs.

12. Theſe Offences recited are againſt the Service and Worſhip of God: there remain two, which likewiſe pertain to the Diſhonour of God; the one is the Abuſe of his Name by Perjury; the other is the adhering to God's declared Enemies, evil and out-caſt Spirits, by Conjuration and Witchcraft.

Perjury.

13. For Perjury; it is hard to ſay whether it be more odious to God, or pernicious to Man; for an Oath, ſaith the Apoſtle, *is the End of Controverſies:* if therefore that Boundary of Suits be taken away, or miſplaced, where ſhall be the End? Therefore wilful and corrupt Perjury is to be enquired of, in any of the King's Courts, even the Court-Barons, and the like; and that as well of the Actors, as of the Procurers and Suborners.

Conjuration and Witchcraft.

14. For Witchcraft; by the former Law it was not Death, except it were actual and groſs Invocation of evil Spirits, or making Covenant with them; or taking away Life by Witchcraft: but now by an Act 1 *Jacob.* Charms and Sorceries, in certain Caſes of procuring unlawful Love, or bodily Hurt, are made Felony, the ſecond Offence; the firſt being Impriſonment and Pillory.

Offences againſt the State.

15. (2.) All the late Statutes which inflict capital Puniſhment upon Extollers of the Pope's Supremacy, Denyers of the King's Supremacy, Jeſuits and Seminaries, and other Offenders of that Nature, have for their principal Scope, not the Puniſhment of the Error of Conſcience; but the repreſſing of the Danger of the State. This is the true Spirit of the Laws, and therefore ſuch Offences are to be placed under the Offences that concern the King and his State.

Againſt the King's Perſon.

16. Theſe Offences, therefore, reſpect either the Safety of the King's Perſon, or the Safety of his State and Kingdom; which tho they cannot be diſcovered in Deed, yet they may be diſtinguiſhed in Speech. Firſt then, if any have conſpired againſt the Life of the King, or the Queen's Majeſty, or of the Prince their eldeſt Son; the very Compaſſing, and Imagination thereof, is High-Treaſon; if it can be proved by any Fact that is overt: for in the Caſe of ſo ſudden, dark, pernicious, and peremptory Attempts, it were too late for the Law to take a Blow before it gives: and this High-Treaſon, of all others, is moſt heinous; of which Juries are to enquire.

Privy-Counſellors.

17. There is another capital Offence, that hath an Affinity with this, whereof Juries within the Verge are moſt properly to enquire. The King's Privy-Council are as the principal Watch over the Safety of the King; ſo that their Safety is a Portion of his: If, therefore, any of the King's Servants within his Chequer-Roll (for to them only the Law extends) have conſpired the Death of any of the King's *Privy-Council*, this is Felony.

The King's Perſon repreſented three Ways.

18. The King's Perſon and Authority is repreſented in three things; *viz.* in his Seals, in his Monies, and in his principal Magiſtrates: if, therefore, any have counterfeited, clipped or ſcaled his Monies, or other Monies current,

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rent, this is High-Treaſon. So likewiſe to kill certain great Officers, or Judges, executing their Office.

Treaſons of three kinds. 19. The Treaſons which concern the Safety of the King's State, are of three kinds; anſwering to three Dangers, which may happen to a State. Theſe Dangers are foreign Invaſions, open Rebellion, or Sedition; and privy Practice, to alienate and eſtrange the Hearts of the Subject; and to prepare them either to adhere to Enemies, or to burſt out into Tumults and Commotions of themſelves.

Invaſion and Rebellion. 20. Therefore, if any Perſon have ſollicited or procured an Invaſion from Foreigners; or if any have combined to raiſe and ſtir the People to Rebellion within the Realm; theſe are High-Treaſon, tending to the Overthrow of the State; and to be enquired of.

Alienation of Hearts. 21. The third Particular, or Privy Practice, hath diverſe Branches, but one principal Root, which is the vaſt and over-ſpreading Ambition and Uſurpation of the See of *Rome*; for the Pope of *Rome* is, according to his laſt Challenge and Pretences, become a Competitor with the King, for the Hearts and Alienations of the People; and would make them as Fewel ready to take fire upon any of his Commands. This is that Yoke which *England* happily caſt off, even at ſuch time when the Popiſh Religion was nevertheleſs continued; and which diverſe States, that were the Pope's Vaſſals, begin to ſhake off.

Caſes of Treaſon. 22. If, therefore, any Perſon have maintained and extolled the uſurped Authority of the Biſhop of *Rome*, within the King's Dominions, by writing, preaching, or Deed adviſedly, or directly and maliciouſly: or if any Perſon have withdrawn and reconciled any of the King's Subjects; or if any Subject hath refuſed, the ſecond time, to take the Oath of Supremacy lawfully tendered; or if any Jeſuit or Seminary come and abide in *England*; theſe are, by ſeveral Statutes, made Caſes of Treaſon: the Law accounting theſe things as Preparatives, and the ſecret Motions of Seditions and Revolts. And theſe are to be enquired of, both as to the Receivers, Maintainers, Concealers, *&c.* as well as the Principal. In ſome Caſes it is Miſpriſion of Treaſon; and in ſome others, Felony; as namely, that of relieving Jeſuits and Prieſts. The bringing in and diſperſing of *Agnus Dei*, Croſſes, Pictures, or ſuch Traſh, is likewiſe *Præmunire*: and ſo is the Denial to take the Oath of Supremacy the firſt time.

Military Men. 23. And becauſe in the Diſpoſition of a State to Troubles and Perturbations, military Men are the moſt dangerous; therefore, if any of the King's Subjects go over to ſerve in foreign Parts, and do not firſt endure the Touch, that is, take the Oath; or if they have bore Office in any Army, and do not enter into Bond, with Sureties, as is preſcribed; this is made Felony: and of ſuch the Juries are to enquire.

Prophecies. 24. Laſtly, Becauſe the Vulgar are ſometimes led with vain and fond *Prophecies*; if any ſuch ſhall be publiſhed, to the end to move Stirs, or Tumults, this is not Felony; but puniſhed by a Year's Impriſonment and Loſs of Goods: and of this alſo the Juries are to enquire.

25. The

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25. The Eſcape of any Priſoner committed for Treaſon, is Treaſon; whereof the Juries are likewiſe to enquire.

26. (3.) The third part of the Diviſion relates to thoſe Offences which concern the King's People, and are capital; which nevertheleſs the Law terms Offences againſt the Crown, in reſpect of the Protection that the King affords his People; and the Intereſt he has in them and their Welfare: for touch them, and you touch the King. Theſe Offences are of three Natures; the firſt concerns the Preſervation of their Lives; the ſecond the Honour and Honeſty of their Perſons and Families; and the third their Subſtance. *Capital Offences relating to the People.*

27. Firſt for Life. In general, Life is grown ſo cheap in theſe Times, as to be ſet at the Price of Words; and every petty Scorn and Diſgrace can have no other Reparation: nay, ſo many Mens Lives are taken away with Impunity, that the very Life of the Law is almoſt taken away with the Execution; and therefore, tho Life cannot be reſtored to thoſe Men that are ſlain; yet the Law may be reſtored to Life, by proceeding with due Severity againſt the Offenders: and eſpecially the Plot of Ground, which is the King's Carpet, ought not to be ſtained with Blood, crying in the Ears of God and the King. It is true nevertheleſs, that the Law does make diverſe juſt Differences of Life taken away; but yet no ſuch Differences as the wanton Humours and Braveries of Men have, under a reverend Name of Honour and Reputation, invented [a]. *Murder.*

28. The higheſt Degree is, where ſuch an one is killed, to whom the Offender bore Faith and Obedience; as the Servant to the Maſter, the Wife to the Huſband, the Clerk to the Prelate, and the Child to the Father and Mother: and this the Law terms Petty-Treaſon. *Petty-Treaſon.*

29. The ſecond is where a Man is ſlain upon fore-thought Malice, which the Law terms Murther; and it is an Affront horrible and odious, and cannot be blanched.

30. The third is, where a Man is killed upon a ſudden Heat or Affray, whereunto the Law gives ſome little Favour; becauſe a Man in Fury is not himſelf. *Ira furor brevis*; Wrath is a ſhort Madneſs. And the Wiſdom of the Law has made a Difference of the Stab given, where the Party ſtabb'd is out of Defence, and had not given the firſt Blow, from other Manſlaughters. *Man-ſlaughter.*

31. The fourth Degree is that of killing a Man in the Party's own Defence, or by Miſadventure; which tho they be not Felonies, yet the Law does not ſuffer them to go unpuniſhed; becauſe it kindles Sparks of a bloody Mind in the one, and Defence in the other.

32. And the fifth is, where the Law admits Fortification; not by Plea, (for a Man that ſheds Blood, may not juſtify the Fact with pleading not guilty) and the Caſe is found by Verdict, being diſcloſed upon the Evidence; as where a Man in the King's Highway and Peace, is aſſailed to be murdered or robbed; or when a Man defending his Houſe, which is his Caſtle, againſt unlawful Violence; or when a Sheriff or Miniſter of Juſtice,

[a] See the Author's Speech againſt Duelling, *Vol.* I. *pag.* 393.

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tice, is reſiſted in the Execution of his Office; or when the Patient dies in the Chirurgeon's Hands, upon cutting, or otherwiſe: for theſe Caſes the Law privileges; becauſe of the Neceſſity, and becauſe of the Innocency of the Intention. And thus much for the Death of Man; of which Caſes the Juries are to enquire, together with the Acceſſaries before and after the Fact.

Rapes, double Marriages, &c. 33. For the *ſecond* kind, which concerns the Honeſty and Chaſtity of Perſons and Families; the Juries are to enquire of the Raviſhment of Women; of the taking of Women out of the Poſſeſſion of their Parents, or Guardians, againſt their Will; or marrying or abuſing them, or double marrying, where there was not firſt ſeven Years Abſence, and no notice that the Party ſo abſent was alive; and other Felonies againſt the Honeſty of Life.

Robberies. 34. For the *third* kind, which concerns Mens Subſtance; the Juries ſhall enquire of Burglaries, Robberies, cutting of Purſes, and taking of any thing from the Perſon; and generally of all other Stealths, as well ſuch as are plain, as thoſe that are diſguiſed. But firſt they are to uſe Diligence in preſenting, eſpecially thoſe Purloinings and Imbezzelments, which are of Plate, Veſſels, or whatſoever elſe, within the King's Houſe. The King's Houſe is an open Place; it ought to be kept ſafe by Law, and not by Lock: and therefore requires the more Severity.

35. Now for coloured or diſguiſed Robberies; to name two or three of them; the Purveyor that takes without Warrant is no better than a Thief; and it is Felony. The Servant that has the keeping of the King's Goods, and goes away with them, tho he came to the Poſſeſſion of them lawfully, it is Felony. Of theſe the Juries are to enquire, Principal and Acceſſaries. The voluntary eſcape of a Felon is alſo Felony.

Offences againſt the People that are not capital. 36. (4.) For the laſt Part, which is of Offences concerning the People, there are many: they are of three Natures.

(1.) The firſt is Matter of Force and Outrage.

(2.) The ſecond, Matter of Fraud and Deceit.

(3.) The third, Breach and Non-obſervance of certain wholſome and politic Laws for Government.

Force. 37. For the firſt; the Juries ſhall enquire of Riots and unlawful Aſſemblies; of forcible Entries and Detainers with Force; and properly of all Aſſaults of ſtriking, drawing Weapons, or other Violence, within the King's Houſe, and the Precincts thereof; for the King's Houſe, (from whence Examples of Peace ſhould flow into the fartheſt part of the Kingdom, as the Ointment of *Aaron*'s Head to the Skirts of his Garment,) ought to be ſacred, and inviolate from Force and Brawls; as well in reſpect of Reverence to the Place, as in reſpect of Danger and Trouble; and of ſetting an Example to the whole Kingdom: and therefore in that Place, all ſhould be full of Peace, Order, Regard, Forbearance, and Silence.

Exactions. 38. Beſides open Force, there is a kind of Force coming with an open and armed Hand, but diſguiſed; tho no leſs hateful and hurtful; and that is, Abuſe and Oppreſſion by Authority.

39. And

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39. And therefore the Juries are to enquire of all Extortions in Officers and Miniſters; as Sheriffs, Bailiffs of Hundreds, Eſcheators, Coroners, Conſtables, Ordinaries, and others, who by Colour of Office do poll the People.

40. For Frauds and Deceits; thoſe chiefly commended to the Care of Juries, are the Frauds and Deceits in what is the chief Means of all juſt Contracts and Permutation; *viz.* Weights and Meaſures; wherein, tho God has pronounced that falſe Weight is an Abomination, yet the Abuſe is ſo common and general, that if a Man were to build a Church, he need but take the falſe Weights, that may be every where found near at hand; the Weights, or Piles, of Braſs to make the Bells, and the Weights of Lead to make the Battlements: and herein Juries are to make ſpecial Enquiry, whether the Clerk of the Market within the Verge, to whom it properly appertains, have done his Duty. *Frauds.*

41. For Nuſances and Grievances; Juries are to preſent the Decays of Highways and Bridges; for where the Majeſty of the King's Houſe draws Recourſe and Acceſs, it is both diſgraceful to the King, and burthenſome to the People, if the Ways near about be not fair and good: wherein it is ſtrange to ſee the chargeable Pavement and Cauſways in the Entrance of Towns abroad, beyond the Seas; whereas *London*, the ſecond City, at leaſt, of *Europe*, in Glory, in Greatneſs, and in Wealth, cannot be diſcerned by the Goodneſs of the Ways, tho a little perhaps by the Broadneſs of them, from a Village. *Nuſances and Grievances.*

42. For the laſt Part, three Laws are to be regarded by the Juries. *Breach of Statutes.*

(1.) The one concerning the King's Pleaſure.

(2.) The ſecond, concerning the People's Food.

(3.) And the third, concerning Wares and Manufactures.

43. The Juries ſhall therefore enquire of the unlawful taking of Patridges and Pheaſants, or Fowls; the Detraction of the Eggs of the ſaid Wild Fowl; the killing of Hares or Deer; and the ſtealing of Veniſon or Hares: for that which is for Exerciſe and Sport, and Courteſy, ſhould not be turned to Gluttony, and Sale-Victuals. *Killing the King's Game.*

44. The Juries ſhall alſo enquire whether Bakers and Brewers keep their Aſſize; and whether as well they as Butchers, Innholders, and Victuallers, do ſell that which is wholſome, and at reaſonable Prices; and whether they do link and combine to raiſe Prices. *Food.*

45. Laſtly, the *Juries* are to enquire whether the good Statute be obſerved, whereby a Man may have what he thinks he hath, and not be abuſed in what he buys; that is, the *Statute* requiring that none uſe any manual Occupation, but ſuch as have been ſeven Years Apprentice to it: which Law being generally tranſgreſſed, makes the People buy, in Effect, Chaff for Corn; for that which is ill-wrought will wear ill. *Manufactures.*

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SUPPLEMENT XVI.

CHARACTERISTICKS

OF A

Believing CHRISTIAN;

IN

PARADOXES,

AND

Seeming CONTRADICTIONS.

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PREFACE.

SOME Advertiſement may be neceſſary to prevent a Miſconſtruction of the preſent Paper. When rightly conſidered, it appears no way ludicrous, ſarcaſtical, or prophane: but, with a particular Addreſs, to be levelled againſt that well-meant, but perhaps erroneous Practice, of mixing Faith *and* Reaſon, *or* Revelation *and* Philoſophy, *together; which the Author apprehended made an heretical Religion, and a ſuperſtitious Philoſophy*[a]. *Certainly, it may well deſerve to be conſidered, whether* Reaſon *and* Revelation *are not two Things, that ſhould be kept ſeparate, for the mutual Service of both; the true Ends of Religion; and the Advantage of civil Society: and whether a contrary Procedure does not occaſion Hereſies, foment Diſputes and Diviſions, rend the* Church, *diſturb* Governments, *and ſtop the Progreſs of* Philoſophy.

[a] See *de Augment. Scientiar.* p. 262, and the *Novum Organum*, pag. 363, 386, *&c.*

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CHARACTERISTICKS
OF A
Believing CHRISTIAN.

1. A Chriſtian is one who believes ſuch Things as his Reaſon cannot comprehend; hopes for Things he never ſaw; and labours for what he knows he ſhall not obtain: yet in the Iſſue, his Belief appears not to be falſe; his Hope makes him not aſhamed; his Labour is not in vain.

2. He believes Three to be One, and One to be Three; a Father not to be older than his Son; a Son to be equal with his Father; and One proceeding from both, to be equal with both: as believing three Perſons in one Nature; and two Natures in one Perſon.

3. He believes a Virgin to be the Mother of a Son; and that very Son of hers to be her Maker. He believes him to have been ſhut up in a narrow Cell, whom Heaven and Earth could not contain. He believes him to have been born in time, who was, and is, from everlaſting. He believes him to have been a weak Child, and carried in Arms, who is the Almighty; and him once to have died, who alone has Life and Immortality in himſelf.

4. He believes the God of all Grace to have been angry with One that never offended him; and God who hates Sin, to be reconciled to himſelf, tho ſinning continually; and never making, or being able to make him Satisfaction. He believes a moſt juſt God to have puniſhed a moſt juſt Perſon; and to have juſtified himſelf, tho a moſt ungodly Sinner. He believes himſelf freely pardoned; and yet a ſufficient Satisfaction was made for him.

5. He believes himſelf to be precious in God's Sight; and yet loaths himſelf in his own. He dares not juſtify himſelf, even in thoſe things wherein he can find no Fault with himſelf; and yet believes God accepts him in thoſe Services, wherein himſelf is able to find many Faults.

6. He praiſes God for his Juſtice; yet fears him for his Mercy. He is ſo aſhamed, that he dares not open his Mouth before God; and yet he comes

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comes with Boldneſs to God, and aſks him any thing he needs. He is ſo humble as to acknowledge himſelf to deſerve nothing but Evil; yet he believes that God means him all Good. He fears always; yet is bold as a Lion. He is often ſorrowful, yet always rejoicing; many times complaining, yet always giving of Thanks. He is the moſt lowly-minded, yet the greateſt Aſpirer; moſt contented, yet ever craving.

7. He bears a lofty Spirit in a mean Condition. When he is ableſt, he thinks meaneſt of himſelf. He is rich in Poverty, and poor in the midſt of Riches. He believes all the World to be his; yet takes nothing without ſpecial Leave from God. He covenants with God for nothing; yet looks for a great Reward. He loſes his Life, and gains by it; and whilſt he loſes it, he ſaves it.

8. He lives not to himſelf; yet of all others he is moſt wiſe for himſelf. He denies himſelf often; yet no Man loves himſelf better. He is moſt reproached, yet moſt honoured. He has moſt Afflictions, and moſt Comforts.

9. The more Injury his Enemies do him, the more Advantages he gains by them. The more he forſakes worldly things, the more he enjoys them.

10. He is the moſt temperate of all Men, yet fares moſt deliciouſly: he lends and gives moſt freely, yet he is the greateſt Uſurer: he is meek towards all Men, yet inexorable by Men. He is the beſt Child, Huſband, Brother, Friend; yet hates Father and Mother, Brother and Siſter. He loves all Men as himſelf; yet hates ſome Men with a perfect Hatred.

11. He deſires to have more Grace than any Man has in the World; yet is truly ſorrowful when he ſees any Man have leſs than himſelf. He knows no Man after the Fleſh; yet gives all Men their due Reſpects. He knows, if he pleaſe Man he cannot be the Servant of Chriſt; yet, for Chriſt's ſake, he pleaſes all Men in all things. He is a Peace-maker; yet is a continual Fighter, and an irreconcilable Enemy.

12. He believes him to be worſe than an Infidel, that provides not for his Family; yet himſelf lives and dies without Care. He reverences all his Superiors; yet ſtands ſtiffly upon Authority. He is ſevere to his Children, becauſe he loves them; and by being favourable to his Enemies, he revenges himſelf upon them.

13. He believes the Angels to be more excellent Creatures than himſelf; yet counts them his Servants. He believes that he receives many good things by their Means; and yet he neither prays for their Aſſiſtance, nor offers them Thanks; which he does not diſdain to the meaneſt Chriſtian.

14. He believes himſelf a King, how mean ſoever he be: and how great ſoever he is, yet he thinks himſelf not too good to ſerve the pooreſt Saint.

15. He is often in Priſon, yet always at Liberty: a Freeman, tho a Servant. He loves not Honour amongſt Men; yet highly prizes a good Name.

16. He

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16. He believes that God has bid every Man who does him Good, to do it; yet of any Man he is the moſt thankful to thoſe that do for him. He would lay down his Life to ſave the Soul of his Enemy; yet will not venture upon one Sin to ſave the Life of him, who ſaved his.

17. He ſwears to his own Hinderance, and changes not; yet knows that his Oath cannot tie him to Sin.

18. He believes Chriſt to have no need of any thing he does; yet he reckons he relieves Chriſt in all his Acts of Charity. He knows he can do nothing of himſelf; yet he labours to work out his own Salvation. He profeſſes he can do nothing; yet as truly profeſſes he can do all things. He knows that Fleſh and Blood cannot inherit the Kingdom of God; yet believes he ſhall go to Heaven both Body and Soul.

19. He trembles at God's Word, yet counts it ſweeter to him than Honey, and the Honey-Comb; and dearer than thouſands of Gold and Silver.

20. He believes that God will never damn him; and yet fears God for being able to caſt him into Hell. He knows he ſhall not be ſaved by, nor for his good Works; yet does all the good Works he can.

21. He knows God's Providence is in all things; yet is ſo diligent in his Calling and Buſineſs, as if he were to work out his own Happineſs. He believes before-hand that God has purpoſed what he ſhall be, and that nothing can make him alter his Purpoſe; yet prays and endeavours, as if he would force God to ſave him for ever.

22. He prays and labours for what he is confident God means to give; and the more aſſured he is, the more earneſt he prays for what he knows he ſhall never obtain; and yet gives not over. He prays and labours for what he knows he ſhall be no leſs happy without. He prays with all his Heart not to be led into Temptation; yet rejoices when he is fallen into it. He believes his Prayers are heard, even when they are denied; and gives Thanks for that which he prays againſt.

23. He has within him both Fleſh and Spirit; and yet is not a double-minded Man. He is often led Captive by the Law of Sin; yet it never gets dominion over him. He cannot ſin; yet can do nothing without Sin. He does nothing againſt his Will; yet maintains he does what he would not. He wavers and doubts; yet ſtill obtains.

24. He is often toſſed and ſhaken, yet is as Mount *Sion*. He is a Serpent and a Dove; a Lamb and a Lion; a Reed and a Cedar. He is ſometimes ſo troubled, that he thinks nothing true in Religion; yet if he did think ſo, he could not be troubled at all. He ſometimes thinks that God has no Mercy for him; yet reſolves to die in the Purſuit of it. He believes, like *Abraham*, againſt Hope; and tho he cannot anſwer God's Logic, yet with the Woman of *Canaan*, he hopes to prevail with the Rhetoric of Importunity.

25. He wreſtles, and yet prevails; and tho yielding himſelf unworthy of the leaſt Bleſſing he enjoys, yet *Jacob* like, he will not let go without a new Bleſſing. He ſometimes thinks himſelf to have no Grace at all; and

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yet how poor and afflicted ſoever he is beſides, he would not change Conditions with the moſt proſperous Man under Heaven, that is a manifeſt Worldling.

26. He ſometimes thinks that the Ordinances of God do him no good; yet he would rather part with his Life than be deprived of them.

27. He was born dead; yet ſo that it had been Murder for any one to have taken his Life away: and after he began to live, he was ever dying.

28. And tho he has an eternal Life begun in him, yet he accounts he has a Death to paſs through.

29. He counts Self-murder a heinous Sin; yet is ever buſied in crucifying the Fleſh, and in putting to Death his earthly Members; not doubting but there will come a Time of Glory, when he ſhall be eſteemed precious in the Sight of the Great God of Heaven and Earth, appearing with Boldneſs at his Throne, and aſking any thing he needs; being endued with Humility, by acknowledging his great Crimes and Offences; and owning that he deſerves nothing but ſevere Puniſhment.

30. He believes that his Soul and Body ſhall be as full of Glory, as theirs that have more; and no fuller than theirs that have leſs.

31. He lives inviſible to thoſe that ſee him; and thoſe that know him beſt, do but gueſs at him; yet thoſe many times judge more truly of him than he does of himſelf.

32. The World will ſometimes account him a Saint, when God accounts him a Hypocrite; and afterwards, when the World brands him for a Hypocrite, God owns him for a Saint.

33. His Death makes not an End of him. His Soul, which was put into his Body, is not to be perfected without his Body; yet his Soul is more happy, when it is ſeparated from his Body, than when it was joined to it: and his Body, tho torn in Pieces, burnt to Aſhes, ground to Powder, or turn'd to Rottenneſs, ſhall be no Loſer.

34. His Advocate, his Surety ſhall be his Judge; his mortal Part ſhall become immortal; and what was ſown in Corruption and Defilement, ſhall be raiſed in Incorruption and Glory; and a finite Creature ſhall poſſeſs an infinite Happineſs.

SUP-

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SUPPLEMENT XVII.

AN

ATTEMPT

To PROMOTE the

PEACE

OF THE

CHURCH.*

* *See de Augment. Scientiar.* pag. 265.

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PREFACE.

THE *following Attempt conſiſts of two Pieces, wrote at different Times; but both of them having the ſame Scope, and tending to allay the Fury of religious Controverſies, and edify the* Church of England *The firſt was wrote in the Reign of Queen* Elizabeth; *and the ſecond was, many Years afterwards, dedicated to King* James: *but for their Agreement, they are here joined together, as two* Sections *of the ſame Work; to ſupply, as they do in great Meaſure, the* Deficiency *of a* Diſcourſe upon the Degrees of Unity in the City of God, pointed out as wanting, under the Doctrine of inſpired Theology, *in the* de Augmentis Scientiarum *.

The firſt *of theſe Pieces is directed to the contending Parties; and moderates calmly betwixt the* Church of England, *and the budding Sectaries; yet ſo as to open the Ulcers on both Sides; the better to diſpoſe them for healing. And thus it may not be unſeaſonable, even at this Day; tho, by Length of Time, one might hope the Malignity is diſcharged; and the old Leaven conſumed.*

The ſecond *is of a higher Nature; and directed to thoſe who had the Power of regulating both the Civil and Eccleſiaſtical Affairs of the Kingdom: ſo that the two may be looked upon as Counterparts to each other; and both together as a very promiſing Means of effecting a happy Reconciliation, and promoting the Peace and Tranquillity of the* Church of England.

* Pag. 265.

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AN ATTEMPT To PROMOTE the PEACE of the CHURCH.

SECT. I.

Of the CONTROVERSIES *of the* CHURCH *of* ENGLAND.

1. IT is but Ignorance to expect, that the State of Religion should not, especially in the Times of Peace, be exercised with Controversies: for it is the Condition of the *Church militant*, to be ever under Trials. Thus when the fiery Trial of *Persecution* ceases, there succeeds another; which, by contrary Blasts of Doctrine, sifts and winnows Mens Faith; and proves whether they know God aright: as the Trial of Afflictions discovers whether they love him better than they do the World. Accordingly, it was foretold by Christ himself, *That in the latter Times it should be said, lo here, lo there is Christ:* which is to be understood, not as if the very Person of Christ should be assumed and counterfeited; but that his Authority and Preheminence should be challenged and pretended. Thus we have seen that Saying fulfilled, *Ecce in Deserto; ecce in Penetralibus:* while some have sought the Truth in the *Conventicles of Hereticks and Sectaries*; others in the *external Face and Representation of the Church*; and both have been seduced. *The Church always liable to Controversies.*

2. If, therefore, the Controversies of the Church of *England* were not only such as unswathe her Bands, the Bands of Peace; but even such as divided the *Unity of the Spirit*; yet there would be no Occasion for *Catholicks dangerous.* *The Controversies of the Church of* England, *not*

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tholicks to judge, nor for irreligious Perſons to deſpiſe us. But our Contentions need not ſo much that general *Canon* of Chriſt, pronounced againſt Hereticks; *Ye err, not knowing the Scriptures, nor the Power of God*; as the Admonition of St. *James*; *Let every Man be ſwift to hear, ſlow to ſpeak, ſlow to Wrath*: for the Wound is no way dangerous, if we do not poiſon it with our Remedies. And as others have no reaſon to make themſelves Muſick in our Diſcord; ſo I hope that nothing will diſpleaſe ourſelves, which ſhall be candidly and modeſtly propoſed for the appeaſing of theſe Diſſentions. For he who is offended at this Voice; *Ye are Brethren, why ſtrive ye?* will give a great Preſumption, that he is the Perſon who wrongs his Brethren.

Require Reſt rather than Remedy.

3. I will not enter into the Controverſies themſelves; as judging that the Diſeaſe requires Reſt rather than any other Cure. We all know and confeſs they are not of the higheſt Nature; for they do not concern the ſublime Myſteries of Faith, ſuch as detain'd the Churches for many Years after their firſt Peace, when the Hereticks moved curious Queſtions, and made ſtrange Anatomies of the Natures and Perſon of Chriſt; and when the Catholick Fathers were compelled to follow them with all the Subtlety of Deciſions and Determinations, to exclude them from their Evaſions, and to take them in their Labyrinths; whence it was truly ſaid, *that in thoſe Days, it was an ingenious and ſubtle thing to be a Chriſtian.*

Concern not the great Parts of Worſhip.

4. Neither are they concerning the great Parts of the Worſhip of God; (for it is juſtly ſaid, there will be no Unity of Belief, without an Unity of Worſhip) ſuch as the Controverſies of the Eaſtern and Weſtern Churches about Images; and many of thoſe between the Church of *Rome* and us, about the Adoration of the Sacrament, and the like; but we contend about *Ceremonies* and *Things indifferent*; or about the external *Policy* and *Government of the Church*. And if we would but remember that the *ancient and true Bonds of Unity, are one Faith, one Baptiſm*; *and not one Ceremony, or one Policy*; if we would obſerve that League of Chriſtians made by our Saviour, *he that is not againſt us, is with us*; if we could but comprehend that Saying, *the Diverſities of Ceremonies ſhew the Unity of the Doctrine*; and that *Religion has Parts which relate to Eternity, and others which relate to Time*; and if we did but know the Virtue of Silence, and Slowneſs to ſpeak, recommended by St. *James*; our Controverſies would of themſelves ſoon cloſe, and grow together: eſpecially, if we forſook the turbulent Temper of theſe Times, and revived the Proceedings of the Apoſtles, and primitive Fathers of the Church, (which in the like and greater Caſes never entered into Aſſertions and Poſitions, but deliver'd Counſels and Advices;) we ſhould need no other Remedy. *Brother, if that which you give as an Aſſertion, you would deliver by way of Advice*; *Reverence would be due to your Counſel: but Faith is not due to your Aſſertion.* St. *Paul* was content to ſpeak thus, *I, and not the Lord: and according to my Counſel:* but now Men too lightly ſay; *not I, but the Lord*; and bind it with a heavy Denunciation of his Judgments, *to terrify the*

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the ſimple, who have not ſufficiently underſtood out of *Solomon*, *that the cauſeleſs Curſe ſhall not come*.

5. Therefore, as the Accidents are what breed the Danger, and not the Things themſelves, in their own Nature; it is proper the Remedies ſhould be applied, after opening that on either ſide, which keeps the Wound freſh; and works an Indiſpoſition in Mens Minds to a Re-union. And certainly *Peace* is the beſt built upon a Recollection of the Wrongs ſuſtained. The Speeches made, by the wiſeſt Men, for Concord and Harmony, have call'd to remembrance the Extremities uſed on both ſides. And, indeed, *he who ſpeaks Peace, without repeating the Conditions of the Quarrel; rather ſweetens Mens Minds with fallacious Hopes of Peace, than equitably compoſes the Difference* [a]. *Peace beſt built upon a Recollection of the Injuries.*

6. And *firſt*, it is time that an end were made of *that immodeſt and deformed manner of Writing, lately practiſed; wherein Matters of Religion are handled in the Style of the Stage*. Indeed, bitter and earneſt Writing muſt not be haſtily condemned; for Men cannot contend coldly about things they hold dear and precious. A politic Man may herein write, without much Senſe or Feeling of what he ſays; as in a Speculation that regards him not: but a feeling Chriſtian will expreſs in his Words a Character either of Zeal or Love. The latter whereof I could wiſh rather embraced; as being more proper for theſe Times: yet own the former is warranted by great Examples. But to put off all reverent and religious Compaſſion towards Evils, or Indignation towards Faults; and turn Religion into a Comedy or a Satyr; to ſearch and rip up Wounds with a laughing Countenance; to intermix Scripture and Scurrility ſometimes in a Breath: this is far from the Behaviour of a Chriſtian, and ſcarce becoming an honeſt and ſober Man. *There is no greater Confuſion, than the confounding of Jeſt and Earneſt* [b]. The Majeſty of Religion, and the Contempt and Deformity of Things ridiculous, are direct Oppoſites. There are two principal Cauſes of Atheiſm; *viz.* vain Controverſies, and prophane Scoffing: and if theſe two are join'd, no doubt but they will make a great Progreſs [c]. *Religion treated in the theatrical manner.*

7. *Job*, in his own Perſon, ſpeaking of the Majeſty and Gravity of a Judge, ſays, *If I ſmiled, they believed it not:* that is, if I glanced upon Mirth, yet Mens Minds were ſo poſſeſſed with a Reverence of the Action in hand, that they could not receive it. Much leſs ought this mirthful Diſpoſition to reign among *Biſhops* and Divines, when they diſpute about holy Things [d]. And therefore, tho ſome think it Policy to encounter the Scoffer with his own Weapon, as when Cardinal *Sanſovino* adviſed *Julius* the Second to encounter the Council of *Piſa* with the Council of *Lateran*; or as Mr. *Jewel* made a Challenge to confute the Catholicks from *Religious Diſputes to be handled with Gravity.*

[a] *Qui Pacem tractat non repetitis Conditionibus Diſſidij, is magis animos hominum dulcedine Pacis ſallit, quam æquitate componit.*

[b] *Non eſt major Confuſio quam Serij & Joci.*

[c] See the Author's Eſſay on Atheiſm, *pag.* 94. of this Volume. See alſo the Lord *Shafteſbury's Characteriſticks.*

[d] An affected and ill-matched kind of Pleaſantry was found in many Divines of that Age; when even the Pulpit became theatrical; and ſome of the Preachers were Punſters.

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from the Fathers; yet this will not excuſe the Imitation of Evil in another. It ſhould be otherwiſe with us; or as *Cæſar* ſaid, *Let them act as they do; and me like myſelf*[e]: but now, *while we differ about good things, we agree in ſuch as are evil*[f].

The Blame, where juſtly laid.

8. If I were aſked on which ſide lay the Blame? I ſhould remember the Proverb, *that the ſecond Blow makes the Fray*; and the Saying of an obſcure Perſon; *he who replies, multiplies*[g]: and ſhould determine the Queſtion with this; *the one begun, but the other will hear of no end*[h].

A Declaration required of the Clergy.

9. And indeed I wonder, that ſome of thoſe Preachers, who call out for *Reformation*, do not publiſh a Declaration, to ſatisfy the World that they diſlike their Cauſe ſhould be thus ſollicited: for I hope aſſuredly that my Lords of the Clergy, have no Intelligence with this interlibelling; but altogether diſallow that their Credit ſhould be thus defended.

Two kinds of Pamphlets.

10. And ſurely, there is not an indifferent Hand carried towards *Pamphlets*; for one ſort flies in the Dark; and the other is uttered openly: where I might obſerve out of a wiſe Writer, that *to puniſh Men of Genius, ſpreads their Authority*[i]. And indeed we ſee it always happens, that the *forbidden Writings* are deemed certain *Sparks of Truth*, which fly in the Faces of thoſe that would ſtifle and tread them out: whereas an authorized Book is thought to be but the *Language of the Times*. And in plain truth, I find theſe open *Pamphlets* no leſs proper to be ſuppreſſed than the other: becauſe, as the former deface the Government of the Church, in the Perſons of the Biſhops and Prelates; ſo the latter expoſe the Exerciſes of Religion to Contempt, in the Perſons of certain Preachers; and diſgrace a higher Matter, tho in the meaner Perſon.

Violent Oppoſition to Epiſcopacy.

11. Beſides; I find certain indiſcreet and dangerous Poſitions, as if the civil Government had almoſt loſt the Force of its Sinews, and were ready to fall into a Convulſion; all things being full of Faction and Diſorder: which is as unjuſtly acknowledged, as falſly affirmed. I know the Meaning is to enforce the irreverent and violent oppoſing of the Government of Biſhops, as a ſuſpected Fore-runner of a more general Contempt. And I grant there is a Sympathy between the States; but no ſuch Matter in the civil Policy, as deſerves ſo diſhonourable a Reflection.

The Cure of theſe Diſturbances.

12. To conclude this Point, it were to be wiſhed that ſuch Writings had never ſeen the Sun. The next thing is, ſince they are common abroad, that they be cenſured by all who have Underſtanding and Conſcience; as the intemperate Extravagancies of ſome light Perſons. And farther, let Men beware, unleſs they mean to riſque depriving themſelves of Religion, and to pave their own Hearts, as the High-way; how they are converſant in them; and much more how they delight in that Vein: But let them rather turn their *laughing* into *bluſhing*; and be aſhamed, as of a ſhort Madneſs, that they have taken their Sport and Solace in Matters of Religion. This

[e] *Nil malo quam eos ſimiles eſſe ſui, & me mei.*
[f] *Dum de Bonis contendimus, de Malis conſentimus.*
[g] *Qui replicat multiplicat.*
[h] *Alter principium malo dedit, alter modum abſtulit.*
[i] *Punitis Ingeniis, gliſcit Authoritas.*

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This perhaps is a Fault that will be ſoon acknowledged; tho I perceive there are ſome who endeavour to blanch and excuſe it.

13. But to deſcend to a true View and Conſideration of the Accidents and Circumſtances of theſe *Controverſies*, wherein both ſides deſerve Blame or Imputation; I find generally, that Men in Church Matters offend in ſome or all of theſe five Points. *Five Particulars blameable in relation to Church Matters.*

(1.) The giving Occaſion to Controverſies; and the inconſiderate and ungrounded taking of Occaſion.
(2.) The extending and multiplying of Controverſies, to a more general Oppoſition than appears at the firſt, when Mens Judgments are leaſt partial.
(3.) The paſſionate and unbrotherly Practices and Proceedings of both ſides, towards the Perſons of each other; to their Diſcredit and Suppreſſion.
(4.) The Courſes taken on either ſide, for the drawing their Partizans to a more ſtrict Union within themſelves; which always imports a farther Diſtraction of the entire Body.
(5.) And laſtly, the improper and inconvenient propoſing, publiſhing and debating of theſe Controverſies.

I.

14. As to the *Occaſions of Controverſies*; it cannot be denied, that the Imperfections in the Converſation and Government of thoſe who hold chief Place in the Church, have ever been the principal Cauſes and Motives of Schiſms and Diviſions. For while the Biſhops and Governors of the Church continue full of Knowledge and good Works; whilſt they truly feed the Flock; whilſt they deal with ſecular States, in all Liberty and Reſolution, according to the Majeſty of their Calling, and the Care of Souls impoſed upon them; ſo long the Church is ſituated as upon a Hill: no Man makes queſtion of it, or ſeeks to depart from it. But when theſe Virtues in the Fathers and Leaders of the Church, are eclipſed; and they grow worldly Lovers of themſelves, and Pleaſers of Men; then Men begin to grope for the Church as in the Dark; they queſtion whether theſe are the Succeſſors of the Apoſtles, or of the *Phariſees:* yea, tho they ſit in *Moſes*'s Chair, yet they can never ſpeak *as having Authority*; becauſe *they have loſt their Reputation in the Conſciences of Men, by declining from the Way they trace out to others.* Whence Men had need continually have ſounding in their Ears, *go not out*; ſo ready are they to depart from the Church upon every Voice. And therefore it is juſtly obſerved by one who writes as a natural Man, *that the Hypocriſy of Friers did, for a long time, ſupport and bear out the Irreligion of Biſhops and Prelates* [k]. *The Occaſion of Church Controverſies.*

15. For this is the double Policy of the ſpiritual Enemy, either by counterfeit Holineſs of Life to eſtabliſh and authorize Errors; or by Corruption of Manners to diſcredit Truth, and the things that are lawful. *The Calumniating of Biſhops.*

[k] See *Vol.* I. *p.* 21.

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This concerns my Lords the Biſhops, to whom I am Witneſs to myſelf, that I ſtand affected as I ought. No Contradiction has ſupplanted in me the Reverence I owe to their Calling; neither has any Detraction or Calumny debaſed my Opinion of their Perſons. I know ſome of them, whoſe Names are moſt pierced with theſe Accuſations, to be Men of great Virtues; altho the Indiſpoſition of the Times, and the Want of Correſpondence many ways, is enough to fruſtrate the beſt Endeavours to edify the Church. And for the reſt, generally, I condemn none. I am no Judge of them that belong to ſo high a Maſter: neither have I two Witneſſes. And I know it is juſtly ſaid of Fame, *that ſhe relates Things falſe as well as true* [l]. Their Accuſations riſe not all from one Quarter: they have many and different Enemies, ready at hand to invent Slander; more are ready to amplify it, and the moſt are ready to believe it. And *Credulity is the Attractive of Lies* [m]. But if there are any againſt whom *the ſupreme Biſhop has not a few, but many things; if any one has loſt his firſt Love; if any be neither hot nor cold*; if any one has ſtumbled too fondly at the Threſhold, ſo that he cannot ſit well, becauſe he entered ill; it is time they return from whence they are fallen, and *confirm the things that remain.* Great is the Weight of this Fault; *and for their Cauſe Men did abhor the Worſhip of God.* But however it is, thoſe who have ſought to defame them, and caſt Contempt upon them, are not to be excuſed. It is the Precept of *Solomon, that the Rulers be not reproached; no, not in Thought:* but that we draw our very Notions into a modeſt Interpretation of their Actions. The holy Angel would give no Sentence of Blaſphemy againſt the *common Slanderer*; but ſaid, *the Lord rebuke thee.* St. *Paul*, tho againſt him who polluted ſacred Juſtice with tyrannical Violence, he juſtly denounced the Judgment of God, ſaying, *the Lord will ſtrike thee*; yet in ſaying, *thou whited Wall*, he thought he had gone too far, and retracted it: whereupon a learned Father ſaid, *He dreaded even the empty Name, and Shadow of a Prieſt* [n].

The Regard paid them by the ancient Councils and Synods.

16. The ancient *Councils* and *Synods*, as we find in eccleſiaſtical Hiſtory, when they deprived a Biſhop, never recorded his Offence; but buried it in perpetual Silence. *Cham* purchaſed his Curſe, by revealing his Father's Diſgrace. And it is a much greater Fault to aſcend from their Perſon to their Calling; and draw that in queſtion. Many good Fathers ſpeak with rigour and ſeverity of the Unworthineſs of Biſhops; as if it directly forfeited and ceaſed their Office. One ſays, *we are call'd Prieſts, but Prieſts we are not* [o]. And another ſays, *unleſs you undertake the good Work, you cannot be a Biſhop* [p]: yet they meant nothing leſs than to raiſe any Doubt of their Calling or Ordination.

The ſecond Occaſion of Church Controverſies.

17. The *ſecond Occaſion of Church Controverſies is the Nature and Humour of ſome Men.* The Church never wants a kind of Perſons, who love the Salutation of *Rabbi, Maſter*; not in Ceremony or Complement, but

[l] *Pariter faſta, atque infecta canebat.*
[m] *Magnes Mendacij Credulitas.*
[n] *Ipſum quamvis inane nomen, & umbram* Sacerdotis *expavit.*
[o] *Sacerdotes nominamur, & non ſumus.*
[p] *Niſi bonum opus amplectaris, Epiſcopus eſſe non potes.*

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but from an inward Authority which they affect over Mens Minds, in drawing them to depend upon their Opinions, and to *ſeek Knowledge at their Lips*. Theſe Men are the true Succeſſors of *Diotrephes*, the Lover of Pre-heminence, and not Lord Biſhops. Theſe alſo have their Adherents, *whoſe Glory is Obedience* [q]; ſtiff Followers, and ſuch as have a wonderous Zeal for thoſe they have once choſen to be their Maſters. This latter ſort are generally young Men, of ſuperficial Underſtanding, and carried away with partial Reſpects of Perſons, or with the enticing Appearance of godly Names and Pretence: *few follow Things themſelves, more follow the Names of Things, and moſt the Names of their Maſters* [r].

18. About theſe general Affections are wreathed and interlaced accidental and private Emulations and Diſcontents; all which together break forth into Contentions; ſuch as either violate Truth, Sobriety, or Peace. Theſe Generalities apply themſelves. The *Univerſities* are the Seat or Continent of this Diſeaſe; whence it has been, and is derived into the reſt of the Kingdom. There Men will no longer be *of the Number*. There do ſome ſide themſelves, before they know their right Hand from their left: ſo true it is *that they skip from Ignorance to Prejudice* [s]; and never take a ſound Judgment in their Way. But as it is well obſerved, *betwixt the Judgment of Youth, and the Prejudice of old Age; all Truth is corrupted* [t]. When Men are indifferent, and not partial, their Judgment is weak and unripe, thro Want of Years; and when it grows to Strength and Ripeneſs, by that time it is foreſtalled with ſuch a Number of prejudiced Opinions, that it becomes unprofitable.

Emulation and Party nouriſhed by the Univerſities.

19. In the mean time, the honourable Names of *Sincerity*, *Reformation*, and *Diſcipline*, are ſet foremoſt; ſo that Contentions and furious Zeal cannot be touched, but theſe *holy Things* are firſt thought to be violated. But however Sollicitation for the Peace of the Church may be cenſured to proceed from *carnal Senſe*; I will conclude with the Apoſtle; *While there is Zeal and Contention amongſt you, are ye not carnal?* And however the compounding of Controverſies may be thought to favour of Man's Wiſdom, and human Policy; and however others may think themſelves led by *the Wiſdom which is from above*; yet I ſay with St. *James*, *This Wiſdom deſcends not from above; but is earthly, ſenſual, deviliſh: for where Envying and Strife is, there is Inconſtancy, and every evil Work* [u]. Of this *Inconſtancy* it is well ſaid by a learned Father; *they endeavour to go forward ſtill, not to Perfection, but to Change* [w].

The Abuſe of Names.

20. The *third Occaſion of Controverſies I obſerve to be, an extreme and unlimited Deteſtation of ſome former Hereſy, or Corruption of the Church, already acknowledged and convicted.*

A third Occaſion of Church Controverſies, an extreme flying from Hereſy or Corruption.

[q] *Quorum Gloria in Obſequio.*
[r] *Pauci res ipſas ſequuntur, plures nomina rerum, plurimi nomina Magiſtrorum.*
[s] *Tranſeunt ab Ignorantia ad Prejudicium.*
[t] *Inter juvenile Judicium, & ſenile Prejudicium, omnis Veritas corrumpitur.*
[u] *Non eſt iſta ſapientia de ſurſum deſcendens, ſed terrena, animalis, diabolica: Ubi enim Zelus & Contentio, ibi* Inconſtantia *& omne Opus parvum.*
[w] *Procedere volunt, non ad Perfectionem, ſed ad Permutationem.*

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Thus the Cauſe of the *Arian* Hereſy was particularly grounded upon a Deteſtation of Gentiliſm; leſt the Chriſtians ſhould ſeem, by the Aſſertion of the equal Divinity of *Chriſt*, to approach to the Acknowledgment of more Gods than one. The Deteſtation of the Hereſy of *Arius* produced that of *Sabellius*; who holding for execrable the Diſſimilitude which *Arius* pretended in the Trinity, fled ſo far from him as to fall upon that other Extremity, of denying the Diſtinction of Perſons; and to ſay they were only Names of ſeveral Offices and Diſpenſations. And moſt of the Hereſies and Schiſms of the Church have ſprung from this Root: while Men have made it, as it were their Rule, to meaſure the moſt perfect Religion, by taking it fartheſt from the Error laſt condemned. *Theſe are Hereſies which riſe out of the dead Aſhes of others* [x]. And this way of judging, in ſome Degree poſſeſſes many at preſent. They think it the true Touch-ſtone of Good and Evil, to meaſure every thing as it is more or leſs oppoſite to the Inſtitutions of the Church of *Rome*; be it Matter of Ceremony, Policy, or other Inſtitutions of greater Weight; deeming that ever moſt perfect which is fartheſt removed from her; and that ever polluted and blemiſhed, which participates in any Appearance with her.

The Danger of this Error.

21. This is a ſubtile and dangerous Notion for Men to entertain; being apt to delude the Eſpouſers; more apt to delude the People; and apteſt to make us calumniate our Adverſaries. This Notion might almoſt bring us to the re-baptization of Children, baptized according to that Religion: For the re-ordaining of Prieſts, is a Matter already reſolutely maintained. Let Men therefore beware how they are abuſed by this Opinion; and know that it is a Matter of much greater Wiſdom and Sobriety, to be well adviſed, whether in the general Demolition of the Inſtitutions of the Church of *Rome*, there were not (as Mens Actions are imperfect) ſome Good purged away with the Bad; rather than to purge the Church, as they pretend, every Day anew: which is the way to make a deſperate Wound in her Bowels; as is already begun.

A fourth Occaſion, the Imitation of foreign Churches.

22. The *fourth Occaſion of theſe Controverſies*, and which alſo troubled the Church in former times, *is a partial Affectation and Imitation of the foreign Churches.* For many of our People, eſpecially during the time of Perſecution, having been converſant in Churches abroad; and received great Impreſſion of the Form of Government there ordained, have violently endeavoured to intrude the ſame upon our Church. But I anſwer, let us agree in this, *that every Church do what is convenient for its own State*; if we do not agree in particular Cuſtoms [y]. And tho their Churches had received the better Form; yet we are often to ſeek, not that which is beſt, but that good Thing which is readieſt to be had [z]. Our Church is not now to plant; being already ſettled and eſtabliſhed. Perhaps in civil States, a Republic is more political than Monarchy: yet God forbid that all lawful Kingdoms ſhould be bound to innovate, and make Alterations.

He

[x] *Poſthumi Hareſium filij.*

[y] *Conſentiamus in eo quod convenit; non in eo quod receptum eſt.*

[z] *Non quod optimum, ſed e Bonis quid proximum.*

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He who brings in evil Customs, resists the Will of God revealed in his Word: he who brings in new Things resists the Will of God revealed in things themselves[a]. Take Counsel of the Providence of God, as well as of his Word[b]. Neither do I admit that their Form, tho it were possible and convenient, is better than ours; if some Abuses were taken away. The Parity and Equality of Ministers is a thing of great Confusion; so is an ordinary Government by Synods, which necessarily ensues upon the other.

Inconveniencies in the foreign Churches.

23. It is hard in all Cases, but especially in Religion, when Voices shall be numbered, and not weighed. These were the Words of a wise Father; *To say the Truth, I am utterly determined never to come to any Council of Bishops; for I never yet saw a good End of any Council: for their Councils do not abate, but rather increase the Mischief*[c]. Which is to be understood not so much of general *Councils*, as *Synods*, met for the ordinary Government of the Church. As for the Deprivation of Bishops, and the like Causes; this Mischief has taught the Use of *Archbishops*, *Patriarchs*, and *Primates*; as the Abuse of them since has taught Men to dislike them.

The Fruits of the foreign Churches.

24. But it will be said, regard the Fruits of the Churches abroad, and ours. To which I say, that I beseech the Lord to multiply his Graces and Blessings upon those Churches an hundred fold: Yet it is not good to fall upon numbering of them. Perhaps our Peace has made us more wanton: perhaps also (tho I would be loth to derogate from the Honour of those Churches, were it not to remove Scandal) their Fruits are as Torches in the dark; which appear greatest afar off. I know they may have some strict Orders, for the repressing of various Excesses. But when I consider the Censures of certain Persons, passed as well upon particular Men, as upon Churches, I think of the Saying of a *Platonist*; *Certainly the Vices of the irascible Part of the Soul, are more heinous than those of the concupiscible, altho more secret*[d]: a Matter that appear'd flagrant by the ancient Contentions of Bishops. And thus much for the *Occasions of these Controversies*.

II.

The Growth and Progress of Controversies.

25. We now proceed to the Growth and Progress of the Controversies; whereby the Saying of *Solomon* will be verified; *That the Course of Contention is to be stopped at the first; being otherwise as the Waters; which if they gain a Breach, it will scarce ever be recovered.*

The Progress of the Side for Reformation.

26. The Side that calls for Reformation expresses, (1.) some Dislike of certain *Ceremonies*, supposed to be superstitious. (2.) They complain of *dumb Ministers*, who possess rich Benefices. (3.) They inveigh against the

[a] *Qui mala introducit, voluntatem Dei oppugnat revelatam in Verbo; qui nova introducit, voluntatem Dei oppugnat revelatam in Rebus.*

[b] *Consule Providentiam Dei, cum Verbo Dei.*

[c] *Equidem, ut vere quod res est scribam, prorsus decrevi fugere omnem* Conventum Episcoporum: *nullius enim Concilij bonum exitum unquam vidi: Concilia enim non minuunt mala, sed augent potius.*

[d] *Certe vitia irascibilis partis animæ sunt gradu praviora, quam concupiscibilis, tametsi occultiora.*

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idle and *monaſtical Continuance of ſuch Miniſters in the Univerſities*, as have Livings to reſide upon; and the like Abuſes. (4.) Then they go on to condemn the *Government of Biſhops*; as an Hierarchy, remaining to us of the Corruptions of the Church of *Rome*. (5.) They except to ſeveral *Inſtitutions in the Church*; as not ſufficiently freed from the Pollutions of former Times. (6.) And laſtly, they define of an *only and perpetual Form of Policy* in the Church; which, without Conſideration of Poſſibility, and Foreſight of Danger, and Perturbation of the Church and State, muſt be created and planted by the Magiſtrates. Here they ſtop. Others not able to keep footing on ſuch ſteep Ground, deſcend farther; and pretend the ſame muſt be entered into, and accepted by the People, at their Peril; without attending the Eſtabliſhment of Authority. And in the mean time they refuſe to communicate with us; reputing us to have no Church. This has been the Progreſs of the one Side: I mean of the Generality. For I know, ſome were at the higheſt Strain at firſt.

Of thoſe on the Side of the Eſtabliſhment.

27. Neither has the Side which maintains the preſent Government of the Church, kept one Tenour. For (1.) the Ceremonies pretended to be corrupt, they maintain'd to be things indifferent; and oppoſed the Examples of the good Times of the Church, to the Challenge made them; becauſe they were uſed in the later Times of Superſtition. (2.) They were alſo content mildly to acknowledge many Imperfections in the Church; as Tares coming up among the Corn; which yet, according to the Wiſdom of our Saviour, were not contentiouſly to be pulled up; leſt it might ſpoil and ſupplant the good Corn: but they were to grow on together till the Harveſt. (3.) They afterwards proceeded to a more abſolute Defence of all the *Orders of the Church*; and ſtiffly maintained, that nothing was to be innovated; partly, becauſe there was no Occaſion; partly, becauſe it would make a Breach upon the reſt. (4.) Hence, exaſperated thro Contention, they are fallen to a direct Condemnation of the contrary Party, as of a *Sect*. And, (5.) ſome indiſcreet Perſons have been bold, in open Preaching, to uſe diſhonourable and derogatory Speech and Cenſure of the Churches abroad; inſomuch, that ſome of our Men, ordain'd in foreign Parts, have been pronounced *unlawful Miniſters*.

Each Party greatly differs from itſelf.

28. Thus, we ſee, the Beginnings were modeſt; but the Extremes are violent: ſo that each Side now differs almoſt as much from itſelf, as at firſt the one did from the other. And tho my Meaning is not to enter into the Controverſies themſelves; yet I admoniſh the Maintainers of the abovementioned Diſcipline, to weigh and conſider ſeriouſly and attentively, how near they are to them, with whom they will not join. 'Tis very hard to affirm, that the *Diſcipline*, which they ſay we want, is one of the eſſential Parts of the Worſhip of God; and not to affirm withal, that the People, upon the Peril of Salvation, without ſtaying for the Magiſtrate, are to gather themſelves into it. I demand, if a civil State ſhould receive the *Preaching of the Word*, and *Baptiſm*; and interdict and exclude the *Sacrament of the Lord's Supper*; were not Men bound, upon Danger of their Souls, to collect to Congregations; wherein they might celebrate this Myſtery;

The Error of the Separatiſts.

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Myſtery; and not content themſelves with that Part of God's Worſhip which the Magiſtrate had authorized? This I ſpeak, not to draw them into a Diſlike of others; but into a more deep Conſideration of themſelves: *Perhaps they do not return for want of knowing to what length they have run* [e].

29. Again, to my Lords the Biſhops I ſay, that it is hard for them to avoid Blame, in the Opinion of an indifferent Judge, for ſtanding ſo preciſely upon altering nothing: *Laws unrefreſhed with new ones, grow ſour* [f]. *And without changing what is bad, the Good cannot be continued* [g]. To take away many Abuſes ſupplants not good Orders; but eſtabliſhes them. *A contentious Retaining of Cuſtom, is as turbulent a thing, as Innovation* [h]. A good Huſbandman is ever pruning his Vineyard, or his Field; not unſeaſonably indeed, nor unſkilfully, but lightly: he ever finds ſomewhat to do. We hear of no Offers made by the Biſhops of *Bills in Parliament*; which, no doubt, proceeding from them to whom it properly belongs, would have every where met with Acceptance. Their own Conſtitutions and Orders have reformed them little. Is nothing amiſs? Can any Man defend the Uſe of *Excommunication*, as a baſe Proceſs, to lacky up and down for Duties and Fees; it being a precurſory Judgment of the latter Day? Is there no means of training and nurſing up Miniſters, (for the Yield of the Univerſities will not ſerve, tho they were ever ſo well governed;) to train them, I ſay, not to preach (for that every Man confidently adventures to do) but to preach ſound Doctrine; and to handle the *Scriptures* with Wiſdom and Judgment? I know Propheſying was ſubject to great Abuſe; and would be more abuſed at preſent; becauſe the Heat of Contentions is increaſed: but, I ſay, the only Reaſon of the Abuſe was, becauſe there was a popular Audience admitted to it; and becauſe it was not contained within a private Conference of Miniſters. Other things might be mentioned. I pray God to inſpire the Biſhops with a fervent Love and Care of the People; and that they may not ſo much urge Things in Controverſy, as Things out of Controverſy; which all Men confeſs to be right and good. And thus much for the *ſecond Point*.

The Stiffneſs of the Biſhops.

III.

30. As to the *third Point*, that of *unbrotherly Proceeding* on either Side; it is directly contrary to my Purpoſe to amplify Wrongs: it is ſufficient to note and number them; which I do alſo, to move Compaſſion and Remorſe on the offending Side; and not to animate Challenges and Complaints on the other. And this Point chiefly regards the Side which has the greateſt Power: for *Injuries proceed from thoſe that have the upper hand* [i].

Uncharitable Procedure.

31. The

[e] *Fortè non redeunt, quia ſunm progreſſum non intelligunt.*
[f] *Leges, novis legibus non recreata, aceſcunt.*
[g] *Qui mala non permutat, in bonis non perſeverat.*
[h] *Moroſa moris retentio, res turbulenta eſt, aque ac novitas.*
[i] *Injuria potentiorum ſunt.*

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Of the Party in Power.

31. The Wrongs of thoſe poſſeſſed of the Government of the Church, to the others, can hardly be diſſembled or excuſed: they have charged them as if they had denied Tribute to *Cæſar*; and withdrawn from the civil Magiſtrate the Obedience they have ever yielded and taught. They have ſorted and coupled them with the *Family of Love*; whoſe Hereſies they have laboured to deſtroy and confute. They have been ſwift to receive Accuſations againſt them, from thoſe that have quarrelled with them, only for ſpeaking againſt Sin and Vice. Their Accuſations and Inquiſitions have been ſtrict, ſwearing Men to Blanks and Generalities; not included within the Compaſs of certain Matter, which the Party who takes the Oath may comprehend: And this is a captious and ſtrained thing. Their urging of Subſcription to their own Articles, is but *irritating and provoking the Diſeaſes of the Church* [k]; which otherwiſe would ſpend and diſcharge themſelves. *He ſeeks not Unity, but Diviſion, who exacts that in Words, which Men are content to yield in Action* [l]. And there are ſome who, I am perſuaded, will not eaſily offend by Non-conformity, yet make a Conſcience to ſubſcribe; as knowing this Mark of Inconſtancy, and Defection from what they have long held, will diſable them from doing that Good they might otherwiſe effect: for ſuch is the Weakneſs of many, that they think their Miniſtry would be thereby diſcredited. As for their eaſy filencing them, in ſuch a great Scarcity of Preachers; this is to puniſh the People, and not the Prieſts. Ought not the Biſhops to keep one Eye open upon the Good thoſe Men do; and not to fix them both upon the Evil only ſuppoſed to proceed from them? Indeed for ſuch as are intemperate and incorrigible; God forbid they ſhould be permitted to preach: but ſhall every inconſiderate Word, ſometimes captiouſly watched, and for the moſt part harſhly enforced, be a Forfeiture of their Voice and Gift in Preaching? As for particular Moleſtations; I take no Pleaſure to recite them. If a Miniſter ſhall be troubled for ſaying in Baptiſm, *do you believe*, for *doeſt thou believe?* If another ſhall be called in queſtion for praying for her Majeſty, without the Additions of her Titles; whilſt the very *Form of Prayer* in the Book of *Common-Prayer*, has, *thy Servant Elizabeth*, and no more. If a third ſhall be accuſed upon theſe Words, uttered with relation to our Controverſies, *tollatur Lex, & fiat Certamen* [m]: (whereby was meant, that the Prejudice of the Law removed, the Reaſons on both Sides ſhould be equally compared) as if it were calling the People to Sedition and Mutiny; or as if he had ſaid, *away with the Law, and try it out by Force.* If theſe, and the like Particulars be true, which I have but by Rumour, and cannot affirm; it is to be lamented, that they ſhould labour amongſt us with ſo little Comfort. I know that reſtrained Governments are better than remiſs ones; and I am of his Mind, who ſaid, *'tis better to live where nothing is lawful, than where all things are lawful.* I diſlike that Laws ſhould be diſcontinued, or Diſturbers

[k] *Laceſſere & irritare morbos eccleſiæ.*

[l] *Non conſenſum quærit ſed diſſidium, qui, quod facilis præſtatur, in verbis exigit.*

[m] Set aſide the Law, and let Trial be made.

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turbers go unpuniſhed: but Laws are like the Grape, that when too much preſſed, yields a harſh and unwholſome Wine. Of theſe things I muſt ſay; *The Wrath of Man worketh not the Righteouſneſs of God.*

Of the Party out of Power.

32. As for the *Injuries* of the other Side; they are but headleſs Arrows; fiery and eager Invectives; and, in ſome fond Men, uncivil and irreverent Behaviour towards their Superiors. This laſt Invention alſo, which expoſes them to Deriſion and Obloquy by Libels, charges not the whole Side: nor even that other, tho ſtill more odious, practiſed by the worſt ſort of them; which is to call in certain mercenary Troops, that oppoſe Biſhops, and all other eccleſiaſtical Dignities, to the Spoil of their Endowments and Livings. Of theſe I cannot ſpeak too ſeverely. It is an Intelligence between Incendiaries and Robbers; the one to fire the Houſe, the other to riſle it.

IV.

The Procedure of the Separatiſts, or Oppoſers of Epiſcopal Government.

33. The *fourth Point* wholly regards thoſe who oppoſe the preſent *eccleſiaſtical Government*; and who, altho they have not cut themſelves off from the Body and Communion of the Church; yet affect certain Cognizances and Differences, wherein they ſeek to correſpond among themſelves; and to be ſeparate from others. And it is truly ſaid, that *there are as well ſchiſmatical Faſhions, as Opinions*[n]. Firſt, they have impropriated to themſelves the Names of *zealous*, *ſincere*, and *reformed*; as if all others were cold Minglers of holy and prophane Things, and Friends to Abuſes. Nay, let a Man be endued with great Virtues, and fruitful in good Works; yet if he concur not with them, they term him, in Derogation, *a civil and moral Man*; and compare him to *Socrates*, or ſome heathen Philoſopher: whereas the Wiſdom of the Scriptures teaches us, to judge and denominate Men religious, according to their Works of the *ſecond Table:* becauſe they of the *firſt* are often counterfeit, and practiſed in Hypocriſy[o]. So St. *John* ſays, that *a Man vainly boaſts of loving God, whom he has not ſeen, if he love not his Brother, whom he has ſeen.* And St. *James* ſays, *this is true Religion, to viſit the fatherleſs and the Widow.* So that what is with them but *philoſophical* and *moral*, is, in the Apoſtle's Phraſe, *true Religion and Chriſtianity.*

Their Pretences to Zeal and Sincerity.

Their Pretences to Light and Perfection.

34. And as in Affection they challenge the Virtues of *Zeal*, *Sincerity*, *&c.* ſo in Knowledge, they attribute to themſelves *Light* and *Perfection.* They ſay the Church of *England*, in King *Edward*'s Time, and the Beginning of the Queen's Reign, was but in the Cradle; and that the Biſhops of thoſe times did ſomewhat for Day-break; but that Maturity and Fulneſs of *Light* proceeds from themſelves. So *Sabinius*, Biſhop of *Heraclea*, a *Macedonian* Heretick, ſaid, that the Fathers in the Council of *Nice* were but Infants, and ignorant Men; and that the Church was not ſo perfect in their Decrees, as to refuſe the farther Ripeneſs of Knowledge, which Time had revealed. And as they cenſure virtuous Men,

[n] *Tam ſunt Mores quidam Schiſmatici, quam Dogmata Schiſmatica.*

[o] See the Author's *Eſſays*, pag. 97, 98. of this Volume.

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Men, by the Names of *civil* and *moral*; ſo they cenſure Men truly religious, and wiſe, who ſee into the Vanity of their Affections, by the Name of *political* Perſons; ſaying, *that their Wiſdom is but carnal, and ſavouring of Man's Brain.* So likewiſe, if a Divine preach with Thought and Care, not in the vain ſcholaſtical Manner, but with Strength and Solidity; ordering the Matter he handles diſtinctly, for the ſake of Memory; deducing it down in the Way of Direction; and authorizing it with ſtrong Proofs and Warrants; they cenſure it as a Form of ſpeaking, not becoming the Simplicity of the Goſpel; and refer it to the Reprehenſion of St. *Paul*, ſpeaking of the *enticing Speech of Man's Wiſdom.* Now for their own manner of *Preaching*, what is it? Surely they exhort well, work Compunction of Mind, and bring Men to the Queſtion, *Men and Brethren, what ſhall we do?* But that is not enough; except they reſolve the Queſtion. They handle Matters of Controverſy weakly, and ſlightly; and as before an Audience that will accept of any thing. In their Doctrine of Manners there is little but Generality and Repetition. The Word, the Bread of Life, they toſs up and down; but they break it not: they draw not their Directions down to *Caſes of Conſcience*; that a Man may be warranted in his particular Actions, whether they are lawful or not: neither indeed are many of them able to do it, thro the Want of grounded Knowledge; or thro the Want of Study and Application. 'Tis an eaſy thing to call out for the Obſervance of the Sabbath; or to ſpeak againſt unlawful Gain: but what Actions and Works may be done upon the Sabbath, what not; and what Courſes of Gain are lawful, and in what Caſes; to ſet this down, and to clear the whole Matter, with good Diſtinctions and Deciſions, is a Work of great Knowledge, and Labour; that requires much Meditation, converſing with the Scriptures, and other Helps, which God has provided and preſerved for Inſtruction.

Their Reproach of Preachers.

Their own Manner of Preaching.

Their erroneous and imperfect Manner of teaching the People.

35. Again; they carry not an equal Hand in teaching the People their lawful Liberty, as well as their Reſtraints and Prohibitions: but think a Man cannot go too far in what has the Shew of a Commandment. They forget that there are Sins on the Right-hand, as well as on the Left; and that the Word is double edged, and cuts on both ſides; as well the prophane Tranſgreſſions, as the ſuperſtitious Obſervances. Who doubts that it is as unlawful *to ſhut where God has opened, as to open where God has ſhut; to bind where God has looſed, as to looſe where God has bound?* Among Men it is commonly as ill taken to refuſe Favours, as to diſobey Commands. In this kind of Zeal they have pronounced generally, and without Difference; as for Example, that all *Untruths are unlawful*; notwithſtanding the Midwives are directly reported to *have been bleſſed for their Excuſe:* as *Rahab* is ſaid *by Faith to have concealed the Spies.* And *Solomon*'s ſelected Judgment proceeded upon a Simulation: And our Saviour, the more to touch the Hearts of the two Diſciples with a holy Dalliance, made as if he would have paſſed *Emmaus.* Farther, I have heard ſome *Sermons of Mortification*, which, I think, with very good Meaning, they have preached out of their own Experience and Exerciſe; and Things in private Coun-

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ſels not improper; but ſurely no ſound Doctrines, only ſuch as are rather apt to breed in Men weak Opinions and perplexed Deſpairs, than filial and true Repentance.

37. Another Point of great Inconvenience and Danger, is entitling the People to hear Controverſies, and all kinds of Doctrine. They ſay, no part of the Counſel of God is to be ſuppreſſed; nor the People defrauded: ſo that the Difference which the Apoſtle makes between *Milk* and *Strong Meat*, is confounded; and his Precept, that *the Weak be not admitted to Queſtions and Controverſies*, neglected. *Their Admiſſion of the People to all Controverſies.*

38. But chiefly their Manner of handling the Scriptures is to be ſuſpected, as a Seed of farther Inconvenience; for whilſt they endeavour to produce Scripture for every thing; and have, in a manner, deprived themſelves and the Church of a particular Help and Support, by debaſing the Authority of the *Fathers*; they have recourſe to naked Examples, conceited Inferences, and forced Alluſions; ſuch as ruin all Certainty of Religion P. *Their Manner of handling the Scriptures.*

39. Another Extremity, is the exceſſive magnifying of that, which tho it be a principal and moſt holy Inſtitution; yet has its Limits; as well as all other Things. We ſee that wherever, in a manner, they find the *Word*, ſpoken of in Scripture, they expound it of *Preaching:* they have made it almoſt eſſential to the Sacrament of the Lord's Supper, to have a Precedent Sermon; and they have, in a ſort, annihilated the Uſe of Liturgies, and divine Service; altho the Houſe of God be denominated, in a particular manner, the *Houſe of Prayer*, and not the *Houſe of Preaching*. *Their extreme magnifying of Preaching.*

40. As for the Life of the good Monks and Hermits in the *primitive Church*; I know they will condemn a Man as half a Papiſt, who maintains them to be other than prophane: becauſe ſuch Hermits heard no Sermons. In the mean time, *what Preaching is*, and *who may be ſaid to preach*, they do not enquire: but, as far as I ſee, every Man, who preſumes to ſpeak in the Chair, is by them accounted a *Preacher*. But I am aſſured, that many who call hotly for a *preaching Miniſtry*, deſerve to be the firſt that ſhould be expelled. All theſe Errors and Miſconduct of theirs, they fortify and intrench by a *rivetted Reſpect to their own Opinions*; *and an Impatience to bear Contradiction or Argument*. And I know ſome of them that would think it a Tempting of God, to hear or read what may be ſaid againſt them; as if Men could *hold faſt to that which is good*, without *trying all things* firſt. *Their Stiffneſs and Fondneſs for their own Tenets.*

41. This may ſuffice to offer them a Thought and Conſideration, whether in theſe things they do well or no; and to correct and aſſuage the Partiality of their Followers. But for any Man, who ſhall hereby enter into a Contempt of their Miniſtry; it is but his own Hardneſs of Heart. I know the Work of Exhortation chiefly reſts upon theſe Men; and they have Zeal, and a hate of Sin. But again, let them beware it be not true which *A Conſideration of their Ways laid before them.*

P It may perhaps require a competent Share of good Senſe, to underſtand the Caution here inculcated, which is ſuch as can ſcarce be felt by religious Zealots; who thro their Ignorance generally render themſelves contemptible to the Men of Senſe, and Learning.

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one of their Adverſaries ſaid; *viz.* that they have only two *ſmall Wants*, KNOWLEDGE and CHARITY. And ſo I conclude this Point.

V.

The Way of conducting religious Controverſies.

42. The *laſt Point*, *viz.* the due *publiſhing and debating of theſe Controverſies*, need not be enlarged upon. And the ſtrange Abuſe of *Antiques* and *Paſquils* has been touched before [q]. Certainly the Character of *Love* is more proper for Debates of this nature, than that of *Zeal*. And as for all direct or indirect Glances upon Mens Perſons; they were ever in theſe Caſes diſallowed.

The People no Judges of Controverſies.

43. And whatever may be pretended, the People are no fit Arbitrators; but rather the quiet, the modeſt, and private Aſſemblies, and Conferences of the Learned. *He who ſpeaks before an unqualified Hearer, does not diſpute, but calumniate* [r]. The Preſs and Pulpit ſhould be free from theſe Contentions. Neither *Promotion* on the one ſide, nor *Glory* and *Heat* on the other, ought to continue ſuch Challenges at the *Croſs*, and other Places: but rather all Preachers, eſpecially ſuch as are of a good Temper, and have Wiſdom with Conſcience, ought to inculcate *Peace*, *Silence*, and a *Truce*. Neither let them fear *Solon*'s Law, which in Factions compell'd every Perſon to range himſelf on the one ſide, or the other; nor yet the fond Calumny of *Neutrality*: but let them know, what a wiſe Man ſaid is true; *viz. that Neuters in Contentions are either better, or worſe, than either ſide.*

Concluſion.

44. Theſe things I have wrote in all Sincerity and Simplicity, as to the Controverſies which now diſturb the Church of *England*; and that without all Art and Inſinuation: and therefore am not likely to pleaſe either Party. Yet I hope that what I have ſaid will find a Correſpondence in thoſe Minds which are not imbarked in Partiality; but love the Whole better than a Part.

[q] See above, §. 6, 7.

[r] *Qui apud incapacem loquitur, non diſceptat, ſed calumniatur.*

SECT.

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SECT. II.

Of the REGULATION *of the* CHURCH *of* ENGLAND.*

1. *Eccleſiaſtical Matters* appertain not properly to my Profeſſion; but ſince a Man who ſtands a little removed from a Spot of Ground, may often ſurvey it better than thoſe who are upon it; 'tis not impoſſible, but as a Spectator, I may have obſerved ſome things which the *The Deſign.*

* The following *Section* was by the Author dedicated to King *James*, under the Title of *Certain Conſiderations touching the better Pacification and Edification of the Church of England.* And ſince this Section is of a higher, or more political Nature, than the preceding; as recommending certain Alterations to be made in the Church; it ought to be obſerved that the whole was humbly ſubmitted to his Majeſty and his Council, in the following manner. "The Unity of your Church, excellent Sovereign, is no leſs precious "than the Union of your Kingdoms; they being both Works wherein your Happineſs "may contend with your Worthineſs. Having therefore preſumed, not without your "Majeſty's gracious Acceptance, to ſay ſomewhat of the one [a]; I am the more encou-"raged not to be ſilent on the other: and the rather becauſe it is a Subject which I "have conſidered heretofore [b]. But of all Things this animated me the moſt, that I "found in theſe my Opinions, which I have long embraced (as may appear by what "I have written many Years ago [c]) a Conſent and Conformity with what your Maje-"ſty has publiſhed of your own moſt chriſtian, wiſe, and moderate Senſe in theſe "Caſes; wherein your Majeſty has ſhewn that you ever held the *Whole more dear than any "Part.* For many give Opinion in theſe Matters, as if they deſired not to purge the "Evil from the Good, ſo much as to protect the Evil by the Good. Others act as if "they would ſhew what is good, without examining what is poſſible; which is wiſh-"ing, and not propoſing. And others again proceed as if they would rather remove "than reform. But tho both ſides, as Men, and excellent Men too, run into Extremes; "yet your Majeſty is diſpoſed to find the Golden Mean, and eſtabliſh what is ſound, "and repair what it corrupt or decay'd.

"To your princely Judgment, therefore, I humbly ſubmit whatever I propoſe; of-"fering the ſame but as a Mite into the Treaſury of your Wiſdom. For as the Aſtronomers "well obſerve, that when three of the ſuperior Lights meet in Conjunction, it produces "ſome extraordinary Effects: So there being joined in your Majeſty, the Light of Na-"ture, the Light of Learning, and above all, the Light of God's Holy Spirit; your "Government muſt needs be as a happy Conſtellation over your Kingdoms.

"Neither is there wanting to your Majeſty that fourth Light, which tho but a bor-"rowed Light, is yet of ſingular Efficacy and Moment, added to the reſt; *viz.* the "Light of a moſt wiſe and well compounded *Council:* to whoſe honourable and grave "Wiſdoms I likewiſe ſubmit whatever I ſay; hoping there is no Occaſion for me to "proteſt my Mind and Opinion to be, that till your Majeſty ſhall otherwiſe determine "and order, all actual and full Obedience is to be given to the *Eccleſiaſtical Juriſdiction,* "as it now ſtands; and again, when your Majeſty has determined and ordered, that "every good Subject ought to reſt ſatisfied, and obey your Majeſty's Laws, Ordinances, "and royal Commands."

[a] See *pag.* 5. of this *Volume.*
[b] *Viz.* in the preceding Section.
[c] *Viz.* in the foregoing Section, and in the *de Augment. Scientiar.* Sect. XXVIII.

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Actors themſelves do not. And being conſcious to myſelf, that what I ſhall offer ariſes from no Vein of Popularity, Oſtentation, Deſire of Novelty, Partiality to either Side, Diſpoſition to intermeddle, or any the like Leaven; I conceive Hopes, that what I want in Depth of Judgment, may be countervail'd by Simplicity and Sincerity of Affection.

Two Objections to it.

2. But here it may be proper to remove two Opinions, which directly confront and oppoſe all *Reformation in Religion:* the one bringing it to Nothing; and the other to an Impoſſibility. The *firſt* aſſerts it to be againſt good Policy to innovate any thing in Church Matters; and the *other* pretends that all Reformation muſt be after one Platform.

Whether good Policy allows of Reformation in Religion.

3. (1.) The *firſt* of theſe Objections is excellently anſwered by the Prophet; *ſtand upon the old Ways, and conſider which is the right and true Way, and walk therein.* He does not ſay, *ſtand upon the old Ways, and walk therein:* for with all wiſe and moderate Perſons, Cuſtom and Uſage are indeed of Reverence ſufficient to cauſe a Stand; and make them look about them; but are no Warrant to guide and conduct them: ſo as to be a juſt Ground of Deliberation, but not of Direction. And who knows not that Time is truly compared to a Stream, which carries down freſh and pure Waters into that Dead-Sea of Corruption, ſurrounding all human Actions? Therefore, if Men ſhall not by their Induſtry, Virtue, and Policy, as it were with the Oar, row againſt the Stream, and Bent of Time; all Inſtitutions and Ordinances, be they never ſo pure, will corrupt and degenerate. And I would aſk why the *Civil State* ſhould be purged, and reſtored, by good and wholſome Laws, made every Seſſion of Parliament, deviſing Remedies as faſt as Time breeds Miſchief; and yet the *Eccleſiaſtical State* continue upon the Dregs of Time, and receive no Alteration at all? If it be replied, that had the like Intermiſſion been uſed in Civil Affairs alſo, the Error had not been great; ſurely the Wiſdom of this Nation has thought otherwiſe, from Experience, for ſome hundreds of Years. But if it be ſaid, that there is a Difference between Civil and Eccleſiaſtical Matters; one might as well ſay, that Churches and Chapels need no repair, tho Caſtles and Houſes do: whereas, commonly, to ſpeak the truth, Dilapidations of the inward and ſpiritual Edifices of the Church, are in all times as great as the outward and material. Sure I am, that the very Word and Stile of Reformation, uſed by our Saviour, *from the Beginning it was not ſo*, was applied to *Church Matters*; and thoſe of the higheſt nature; *viz.* the *Moral Law*.

The Church of England *compared with foreign Churches.*

4. He were indeed ungrateful, and unwiſe, who ſhould deny that the Church of *England* flouriſhed under Queen *Elizabeth*. But to compare our own with foreign Churches, I would rather compare them in Virtues than in Defects; or rather as the Vine and the Olive, to ſee which was the moſt fruitful; than as the Briar and the Thiſtle, to diſcern which was the moſt unprofitable. For the ſame Reverence ſhould be uſed to the *Church*, as the good Sons of *Noah* uſed to their Father's Nakedneſs; *viz.* to go as it were backwards,

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backwards, help the Defects thereof, and yet diſſemble them. And it muſt be acknowledged, that ſcarce any Church, ſince the primitive one, yielded, in like Number of Years, and Latitude of Country, a greater Number of excellent Preachers, famous Writers, and grave Governours: and for the Diſcipline and Orders of the Church, as many; the chiefeſt of them holy and good. Yet if St. *John* were to write an Epiſtle to the Church of *England*, as he did to that of *Aſia*, it would ſurely contain the Clauſe, *I have a few Things againſt thee.*

The beſt Time for Reformation.

5. Another Objection under this Head regards not the Matter, but the Time; and pretends, that tho Reformation were neceſſary; yet it is not now ſeaſonable, at his Majeſty's firſt Entrance. But *Hippocrates* ſaid, *If any Alteration be neceſſary, make it at firſt*[d]. And all Examples ſhew, that, as the wiſeſt Princes have always been ſlow in removing Servants and Officers upon their coming in; ſo for rectifying Abuſes and Enormities, and for reforming the Laws, and Policy, of their States, they have chiefly endeavoured to ennoble and recommend their Beginnings by them: as well knowing that the firſt Impreſſion with the People continues long; and that when Mens Minds are moſt in Expectation and Suſpenſe, they are then beſt wrought upon. Hence it ſeems to me, that as the Spring of the Year is the beſt Time for purging the natural Body; ſo the Spring of Kingdoms is the propereſt Seaſon for the purging and rectifying of political Bodies.

That Alteration for the better is to be feared.

6. There remains another Objection, rather of Suſpicion than of Reaſon; yet ſuch as makes a great Impreſſion in the Minds of wiſe and well affected Perſons; *viz. that if a Way be given to Alteration, tho in removing Abuſes; yet it may ſo acquaint Men with the Sweetneſs of Change, as to undermine the Stability even of that which is ſound and good.* This ſurely had been a juſt Allegation in the ancient Contentions and Diviſions between the People and Senate of *Rome*; where things were carried at the Appetites of the Multitude, who can never keep within the compaſs of Moderation: but theſe things having an orderly Paſſage under a King of a royal Power, and approved Judgment; that knows as well the Meaſure of Things, as the Nature of them; 'tis ſurely a needleſs Fear. For a wiſe King, with the Advice of his Council, will diſcern what Things are intermixed, like the Tares among the Wheat; what have their Roots ſo entangled, that the one cannot be pulled up without endangering the other; and what are mixed, but as the Chaff and the Corn, which need only the Fan to ſift and ſeparate them. And ſo much for the firſt Opinion of admitting no Reformation at all.

No Form of Church Diſcipline directed in Scripture.

7. (2.) For the *ſecond* Opinion, *that there ſhould be but one Form of Diſcipline in all Churches; and that impoſed by the Neceſſity of a Command, and Preſcript out of the Word of God:* it is a Matter whereof Volumes have been

[d] *Si quid moves, a principio move.*

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been written; and therefore cannot receive a ſhort Deciſion. But, for my part, I confeſs, that in reading the Scriptures, I could never find any ſuch thing; but that God had left the like Liberty to Church Government, as he has to the Civil Government; to be varied according to Time, Place, and Accidents: which nevertheleſs his high and divine Providence orders and diſpoſes. For all Civil Governments are reſtrained from God to the general Grounds of Juſtice and Manners; but their Policies and Forms are left free: ſo that Monarchies and Kingdoms, Senates and Seignories, popular States, and Commonwealths, are lawful; and where they are planted, ought to be maintained inviolate.

Rites and Ceremonies left to Diſcretion.

8. Thus in Church Matters, the Subſtance of Doctrine is immutable; and ſo are the general Rules of Government: but for Rites and Ceremonies, the particular Hierarchies, Policies, and Diſciplines of Churches; they are left at large. 'Tis therefore proper to return to the ancient Bonds of Unity in the Church of God; which were one *Faith*, one *Baptiſm*; and not one *Hierarchy*, one *Diſcipline*. And here we muſt obſerve the League of Chriſtians, as it is delivered by our Saviour; which in Subſtance of Doctrine is this; *He that is not with us, is againſt us:* but in things indifferent, and only regarding Circumſtances this; *He that is not againſt us, is with us:* provided the general Rules be obſerved; *viz.* that Chriſt's Flock be fed; that there be a Succeſſion of Biſhops and Miniſters, which are the Prophets of the New Teſtament; that there be a due and reverent Uſe of the Power of the Keys; that thoſe who preach the Goſpel, live by the Goſpel; that all things tend to Edification; that all things be done decently, and in order, *&c.* But other Matters are left to the holy Wiſdom and ſpiritual Diſcretion of the Maſter Builders, and inferior Builders in Chriſt's Church; according to the excellent Alluſion of the primitive Father, who obſerved that Chriſt's Garment was without Seam; and yet the Churches Coat of many Colours: and thence ſet down as a Rule; *Let the Variety of the Garment continue, but no Rent be made*[e].

Primitive Examples how to be followed.

9. In this Variety, however, it is a ſafe, and a wiſe Courſe, to follow good Examples and Precedents; but then, by the Rules of Imitation and Example, we muſt conſider, not only what Things are beſt; but what are moſt ſuitable: for inſtance, the Government of the Church in the pureſt Times, of the firſt good Emperors that embraced the Faith. For the Times of Perſecution, before temporal Princes received Chriſtianity, were excellent Times for Doctrine and Manners; but are improper and unſuitable Examples of external Government and Policy. And ſo much for this general Point: We next proceed to the particular Points of Reformation.

The Government of Biſhops *to be continued.*

10. And *firſt for the Government of Biſhops.* Without prejudging the Precedents of other reformed Churches; I hold the Government of Biſhops warranted by the Word of God; and by the Practice of the ancient Church in the beſt Times; and that it is much more convenient for Kingdoms

[e] *In veſte varietas ſit, ſciſſura non ſit.*

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doms than a Parity of Miniſters, and Government by Synods. But then it is to be conſidered, that the Church is not now to plant, or build; but only to be pruned from Corruption; and to be repaired and reſtored in certain Decays. For it is worth noting, what the Scripture ſays, that *the Prieſthood being tranſlated, there muſt alſo be a Tranſlation of the Law.* And it is not poſſible, on account of the great and near Sympathy between the Civil and the Eccleſiaſtical State, to make ſo grand an Alteration in the Church, without having a dangerous Effect upon Kingdoms; and therefore it is fit that this Controverſy ſhould be in *Peace and Silence.*

The Exerciſe and Deputation of their Authority.

11. But there are two Circumſtances in the Adminiſtration of Biſhops, wherein I could never be ſatisfied: the one is the ſole Exerciſe of their Authority; the other the Deputation of their Authority.

Biſhops acting alone, not countenanced by parallel Inſtances.

12. For the firſt; the Biſhop grants Orders alone [f], excommunicates alone, judges alone. This ſeems to be a thing almoſt without Example in good Governments; and therefore not unlikely to have crept in, during degenerate and corrupt Times. The greateſt Kings and Monarchs have their Councils. There is no temporal Court in *England*, of the higher ſort, where the Authority reſts in one Perſon. The *King's Bench*, *Common Pleas*, and the *Exchequer*, are Benches of a certain Number of Judges. The *Chancellor* of *England* has an Aſſiſtance of twelve *Maſters in Chancery*. The *Maſter of the Wards* has a Council of the Court: ſo has the Chancellor of the Dutchy. In the *Exchequer Chamber*, the *Lord Treaſurer* is joined with the Chancellor, and the Barons. The *Maſters of the Requeſts* are always more than one. The Juſtices of Aſſize are two. The *Lord Preſidents* in the North, and in *Wales*, have Councils of diverſe. The *Star-Chamber* is an Aſſembly of the King's Privy-Council, interſperſed with the Lords Spiritual and Temporal: ſo that in the Civil Courts, the principal Perſon has always his Colleagues or Aſſeſſors.

Not ſo from the firſt.

13. The like is to be found in other well governed Common-Wealths abroad, where the Juriſdiction is yet more diſperſed; as in the Courts of Parliament in *France*, and other Places. No Man will deny, but the Acts that paſs the Biſhop's Juriſdiction, are of as great Importance as thoſe that paſs the Civil Courts: for Mens Souls are more precious than their Bodies or Goods; and ſo are their good Names. Biſhops have their Infirmities, and no Exemption from that general Malediction pronounced againſt all Men living; *Wo to him that is alone when he falls*, &c. Nay, the firſt Warrant in ſpiritual Cauſes is directed to a Number: *Tell the Church*; which is not ſo in temporal Matters: and we ſee that in general Caſes of Church Government, there are as well Aſſemblies of all the Clergy in Councils; as of all the States in Parliament. Whence ſhould this ſole Exerciſe of Juriſdiction come? Surely one may ſuppoſe, upon good Ground, that from *the Beginning it was not thus*; and that the Deans and Chapters were Councils about the Sees and Chairs of Biſhops at the firſt; and were to them a Preſbytery or Conſiſtory; and intermeddled not

[f] See below, §. 14.

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not only in the diſpoſing of their Revenues and Endowments; but much more in eccleſiaſtical Juriſdiction. And it is probable, that the Deans and Chapters ſtuck cloſe to the Biſhops in Mattters of Profit and the World; and would not loſe their Hold, except in Matters of Juriſdiction; (which are accounted only Trouble and Attendance) and thus ſuffered the Biſhops to encroach and uſurp: ſo that the one continues whilſt the other is loſt. We ſee that the Biſhop of *Rome* (*Fas enim & ab hoſte doceri*) performs all eccleſiaſtical Juriſdiction, as in *Conſiſtory*. And no queſtion but the firſt Inſtitutions in that Church were excellent.

Not ſo in the Biſhops of Rome.

14. And this Conſiſtory is made up of the Pariſh Prieſts of *Rome*, who term themſelves *Cardinals*, *à cardinibus mundi*[s]; becauſe the Biſhop pretends to be univerſal over the whole World. And of this again, we ſee many Shadows ſtill remaining; as that the Dean and Chapter, for Form's ſake, chooſe the Biſhop; which is the higheſt Point of Juriſdiction: and that the Biſhop when he grants Orders, if there be any Miniſters caſually preſent, calls them to join with him in the Impoſition of Hands; and ſome other Particulars. Therefore it ſeems to me, a thing reaſonable, religious, and agreeable to the firſt Inſtitution, that Biſhops in the greateſt Cauſes, and thoſe which require a ſpiritual diſcerning, (for Example, in the ordaining, ſuſpending or depriving of Miniſters; in Excommunication; in ſentencing the Validity of Marriages and Legitimations; in judging criminal Cauſes, as Symony, Inceſt, Blaſphemy, and the like,) ſhould not proceed ſole and unaſſiſted. And this Point, as I underſtand it, is a Reformation that may be planted *ſine ſtrepitu*; and without any Diſturbance at all. And it is a Matter that will give Strength to the Biſhops, Countenance to the inferior Degrees of Prelates or Miniſters, and the better Iſſue, or Proceeding, to the Cauſes that ſhall paſs.

Whether Strength ſhould be added to the Convocation.

15. And as I wiſh this Strength given to the Biſhops by Council; ſo it may not be unworthy the royal Conſideration, whether Strength ſhould not be given to the general Council of the Clergy, the *Houſe of Convocation*; which was reſtrained when the State of the Clergy became ſuſpected to the Kingdom, on account of their late Homage to the Biſhop of *Rome*: which Caſe is now altered.

Biſhops not to depute their Authority.

16. For the *ſecond* Point, which is the *Deputation of their Authority*; I ſee no perfect and ſure Ground for it; as being ſomewhat different from the Examples and Rules of Government. The Biſhop exerciſes his Juriſdiction by his Chancellor, and Commiſſary Official, *&c.* We ſee in all Laws in the World, Offices of Confidence and Skill cannot be put over, or exerciſed by Deputy; except it be eſpecially contain'd in the original Grant: and in that Caſe it is doubtful. And for Experience, there was never any Chancellor of *England* that made a Deputy: there was never a Judge in any Court that made a Deputy. The Biſhop is a Judge, and of a high Nature: whence comes it, that he ſhould depute; conſidering that all Truſt and Confidence, as was ſaid, is perſonal and inherent; and neither

[s] From the four Quarters of the World.

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ther can, nor ought to be transposed. Surely, in this again we may say, *From the beginning it was not so:* but it is probable, that Bishops, when they gave themselves too much up to the Glory of the World, and became Grandees in Kingdoms, and great Counsellors to Princes, now delegated their proper Jurisdictions, as things of too inferior a Nature for their Greatness; and then in Imitation of *Kings* and *Counts Palatine*, they would have their Chancellors and Judges.

As Kings do.

17. But that Example of Kings and Potentates affords no good Defence. For the Reason why Kings administer by their Judges, tho themselves be supreme Judges, are two: the *one*, because the Offices of Kings are, for the most part, Offices of Inheritance; and it is a Rule in all Laws, that Offices of Inheritance are rather Matters that ground in Interest than in Confidence; as they may fall upon Women, Infants, Lunaticks and Ideots, who are incapable of executing Judicature in Person; and therefore such Offices, by all Laws, might ever be exercised and administred by Delegation. The *second* Reason is, the Amplitude of their Jurisdictions; which is as great as either their Birth-right from their Ancestors, or their Sword-right from God makes it. And therefore, if *Moses*, the Governor over no great People, and those collected together in a Camp, and not scattered in Provinces and Cities, and himself of an extraordinary Spirit, was yet insufficient in Person to judge the People; but did by the Advice of *Jethro*, approved from God, substitute Elders and Judges; how much more should other Kings and Princes?

Bishops able to discharge their Office in Person.

18. There is also a *third* Reason; *viz.* that Kings either in Respect of the Commonwealth, or of the Greatness of their own Patrimonies, are usually Parties in Suits; and then their Judges stand indifferent between them and the Subject. But in the Case of Bishops, none of these Reasons hold. For first, their Office is elective, and for Life; not patrimonial or hereditary; and an Office merely of Confidence, Knowledge, and Qualification. And for the second Reason; it is true their Jurisdiction is ample and spacious; and their Time to be divided between the Labours, as well in the Word and Doctrine, as in Government and Jurisdiction: yet I do not see (supposing the Bishops Courts to be used incorruptly; and without any indirect Course to multiply Causes for Fees) but that the Bishop might very well for Causes of Moment, supply his judicial Function in his own Person. For one Chancellor of *England* dispatches the Suits of the whole Kingdom in Equity. And if hold be taken of what was said before, that the Bishop's Labour in the Word must take up a principal Part of his Time; so I may say again, that Matters of State have taken up most of the Chancellor's Time; they having been, for the most part, Persons upon whom the Kings of this Realm have relied for Matters of Counsel. And therefore there is no doubt but the Bishop, (whose Circuit is less ample, and the Causes in their Nature not so multiplying; with the Help of References and Certificates to and from fit Persons, for the better ripening of Causes in their mean Proceedings, and such ordinary Helps

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incident to Juriſdiction,) may very well ſuffice his Office. Yet there is another Help; for the Cauſes that come before him are, Tythes, Legacies, Adminiſtrations, and other teſtamentary Cauſes; matrimonial Cauſes; Accuſations againſt Miniſters, tending to their Suſpenſion, Deprivation, or Degrading; Symony, Incontinency, Hereſy, Blaſphemy, Breach of Sabbath, and other like Cauſes of Scandal. The two firſt of theſe, in my Opinion, differ from the reſt: for Tythes and Teſtaments are Matters of Profit, and in their Nature temporal; tho by a Favour and Connivance of the temporal Juriſdiction, they have been allowed and permitted to the eccleſiaſtical Courts: the one to the end that the Clergy might ſue for what was their Suſtentation before their own Judges; and the other in a kind of Piety and Religion, which was thought incident to the Performance of the Wills of the Dead. And ſurely for theſe two the Biſhop may with leſs Danger diſcharge himſelf upon his ordinary Judges. And I think likewiſe it will fall out, that thoſe Suits are in the greateſt Number. But for the reſt, which require a ſpiritual Science and Diſcretion, in reſpect of their Nature, or of the Scandal, it were proper no Audience ſhould be given but by the Biſhop himſelf; he being alſo aſſiſted, as was touched before. It were neceſſary alſo that he ſhould be attended by his Chancellor, or ſome others his Officers, learned in the Civil Laws, for his better Inſtruction in Points of Formality, or the Courſes of the Court; which if done, there were leſs Uſe of the *Officials Court*, whereof there is now ſo much Complaint. And Cauſes of the Nature aforeſaid, being only drawn to the Audience of the Biſhop; it would repreſs frivolous and prowling Suits; and give a grave and incorrupt Proceeding to ſuch Cauſes as ſhall be fit for the Court.

The Oath that obliges Men to accuſe themſelves.

19. There is a third Point alſo, not of Juriſdiction, but of Form of Proceeding, which may deſerve Reformation: the rather, becauſe it is contrary to the Laws and Cuſtoms of this Land; which, tho they do not rule thoſe Proceedings, yet may be adviſed with for better Directions; and that is the Oath *ex Officio*, whereby Men are bound to accuſe themſelves; and even ſworn to Blanks, and not to Accuſations and Charges declared. But by the Law of *England* no Man is bound to accuſe himſelf. In the higheſt Caſes of Treaſon, Torture is uſed for Diſcovery, and not for Evidence. In capital Matters no Delinquent's Anſwer upon Oath is required; no, nor permitted. In criminal Matters not capital, handled in the *Star-Chamber*, and in Cauſes of Conſcience handled in the Chancery, for the moſt part grounded upon Truſt and Secrecy, the Oath of the Party is indeed required. But how? Where there is an Accuſation and Accuſer, which we call Bills of Complaint, (from which the Complainant cannot vary, and out of the Compaſs of which the Defendant may not be examined,) exhibited to the Court, and by Proceſs notified to the Defendant. But to examine a Man upon Oath, out of the Inſinuation of Fame; or out of Accuſations ſecret and undeclared; tho it have ſome Countenance from the Civil Law, yet it is ſo oppoſite *ex diametro* to the Senſe and

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and Course of the Common Law, that it may well receive some Limitation.

20. For the *Liturgy*; great Respect and Care should be taken, lest by inveighing against the dumb Ministry, due Reverence be not withdrawn from the *Liturgy*. For tho the Gift of Preaching be far above that of Reading; yet the Action of the *Liturgy* is as high and holy, as that of the Sermon. 'Tis said, *Domus mea domus orationis vocabitur: my House shall be called the House of Prayer*; not the House of Preaching. And whereas the Apostle says, *How shall Men call upon him, whom they have not believed? And how shall they believe unless they hear? And how shall they hear without a Preacher?* It appears, that as Preaching is the more Original, so Prayer is more Final; as the Difference is between the Seed and the Fruit: for the keeping of God's Law, is the Fruit of the Teaching of the Law; and Prayer, or Invocation, or divine Service, or *Liturgy*, is the immediate hallowing of the Name of God, and the principal Work of the first Table, and of the great Commandment of the Love of God. *Prayer to be reverenced.*

21. 'Tis true, that the preaching of the Word of God is the sowing of the Seed; it is the lifting up of the Brazen Serpent; the Ministry of Faith; and the ordinary Means of Salvation: yet it is good to take Example, how the best Actions of the Worship of God may be extolled excessively and superstitiously. Thus the extolling of the Sacrament, bred the Superstition of the Mass; the extolling of the *Liturgy* and Prayers, bred the Superstition of the monastical Orders and Oraisons: and so, no doubt, Preaching likewise may be magnified and extoll'd superstitiously; as if the whole Body of Christ's Worship should be turned into an Ear. So that none of sound Judgment will derogate from the Liturgy, if the Form thereof be in all Parts agreeable to the Word of God, the Example of the primitive Church, and that holy Decency which St. *Paul* commends. And therefore the *first* Point is, that there be a *set Form of Prayer*; and that it be not left either to an extemporary or arbitrary Form. *Secondly*, that it consist as well of Lauds, Hymns, and Thanksgivings; as of Petitions, Prayers, and Supplications. *Thirdly*, that the Form thereof be quickened with some Shortness and Diversities of Prayers and Hymns; and with some Interchanges of the Voice of the People, as well as of the Minister. *Fourthly*, that it admit some Distinctions of Times, and Commemorations of God's principal Benefits, as well general as particular. *Fifthly*, that Prayers likewise be appropriated to several Necessities and Occasions of the Church. *Sixthly*, that there be a Form likewise of Words and *Liturgy* in the Administration of the Sacraments, and in the denouncing of the Censures of the Church, and other holy Actions and Solemnities. These things I think will not be much controverted. *As well as Preaching.* *The proper Form of Prayer.*

22. But for the particular *Exceptions to the Liturgy* in the Form it now stands, I think many of them, allowing they were just, yet seem not to be weighty; otherwise than that nothing ought to be counted light in Matters of Religion and Piety: as the Heathen himself could say, *Etiam* *Exceptions to the Liturgy.*

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vultu ſæpe læditur pietas. Thus the Word *Prieſt* ſhould not be continued, eſpecially with Offence; the Word *Miniſter* being already made familiar. And it may be held as a good Rule in Tranſlating, never to confound that in one Word in the Tranſlation, which is preciſely diſtinguiſhed into two Words in the Original; for fear of Equivocation and Traducing. And therefore ſeeing the Word πρεσβύτερος and ἱερεὺς, are always diſtinguiſhed in the Original; and the one uſed for a Sacrificer, the other for a Miniſter; the Word *Prieſt* being made common to both, whatever the Derivation be, yet in Uſe it confounds the Miniſter with the Sacrificer. And for an Example of this kind, I approve the Diſcretion and Tenderneſs of the *Rhemiſh* Tranſlation, that finding in the Original the Word ἀγάπη, and never ἔρως, always tranſlates Charity, and never Love; becauſe of the Indifferency and Equivocation of the Word with impure Love.

Abſolution. 23. As to the *Abſolution*, it is not unworthy of Conſideration, whether it may not be thought improper and unneceſſary: for there are but two ſorts of *Abſolution*; both ſuppoſing an Obligation precedent; the one upon an Excommunication, which is religious and primitive; the other upon Confeſſion and Penance, which is ſuperſtitious, or at leaſt poſitive; and both particular, neither general. Therefore ſince the one is taken away, and the other has its proper Caſe, what means a general Abſolution, wherein there is neither Penance nor Excommunication precedent? For the Church never looſes, but where the Church has bound. And ſurely this at the firſt was allowed in a kind of ſpiritual Diſcretion; becauſe the Church thought the People could not be ſuddenly weaned from their Conceit of aſſoiling, or abſolving, to which they had been ſo long accuſtomed.

Confirmation. 24. For *Confirmation*; to my Underſtanding, the State of the Queſtion is, whether it be not a Matter miſtaken and altered by Time; and whether that be not now made a ſubſequent to Baptiſm, which was indeed an Inducement to the Communion. For whereas in the primitive Church, Children were examined as to their Faith, before they were admitted to the Communion; Time may ſeem to have turned it, as if it had been to receive a Confirmation of their Baptiſm.

Baptiſm. 25. For *private Baptiſm by Women*, or *Lay-Perſons*; the beſt Divines utterly condemn it: and I have often wondered, that whereas the Book in the Preface to publick Baptiſm, acknowledges that Baptiſm in the Practice of the primitive Church, was anniverſary, and but at certain Times; which ſhews that the primitive Church did not attribute ſo much to Ceremony as to break an outward and general Order for it; the Book ſhould afterwards allow of private Baptiſm, as if the Ceremony were of ſuch Neceſſity, that the very Inſtitution which committed Baptiſm only to the Miniſters, ſhould be broken in regard of the ſuppoſed Neceſſity. And therefore this Point of all others, I think, was but a *Conceſſum propter duritiem cordis.*

26. For

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26. For the Form of *celebrating Matrimony*; the Ring ſeems to many, even of vulgar Senſe and Underſtanding, a Ceremony not grave; eſpecially to be made, as the Words make it, the eſſential Part of the Action: beſides ſome others of the Words are noted in Speech to be not ſo decent and fit. *Matrimony.*

27. For *Muſick in Churches*; that there ſhould be Singing of *Pſalms* and ſpiritual Songs, is not denied: ſo the Queſtion is *de modo*; where, if a Man will look attentively into the Order and Obſervation of it, 'tis eaſy to diſcern between the Wiſdom of the Inſtitution, and the Exceſs of the late Times. For firſt, there are no Songs, or Verſes, ſung by the Choir, which are not ſuppoſed, by continual Uſe, to be ſo familiar with the People, as that they have them without Book; whereby the Sound hurts not the Underſtanding: and thoſe who cannot read the Book, are yet Partakers of the Senſe, and may follow it with their Mind. So again, after the reading of the Word, it was thought fit there ſhould be ſome Pauſe for holy Meditations, before they proceeded to the reſt of the Service: which Pauſe, was thought fit to be filled rather with ſome grave Sound, than with a ſtill Silence; which was the Reaſon of playing upon the Organ after the Scriptures read: all which was decent, and tending to Edification. But then the Curioſity of Diviſion, and Reports, and other Figures of Muſick, have no Affinity with the reaſonable Service of God; but were added in the more pompous Times. *Church-Muſick.*

28. For the *Cap and Surplice*; ſince theſe are things in their Nature indifferent, yet by ſome held ſuperſtitious; and ſince the Queſtion is between *Science* and *Conſcience*; it ſeems to fall within the Apoſtle's Rule, *that the ſtronger condeſcend and yield to the weaker.* Only the Difference is, that it will be materially ſaid, the Rule holds between private Man and private Man; but not between the Conſcience of a private Man, and the Order of a Church. But yet, ſince the Queſtion at this time is of a Toleration, not by Connivance, which may encourage Diſobedience, but by Law, which may give a Liberty; it is good again to be adviſed whether it fall not within the Equity of the former Rule: the rather becauſe the ſilencing of Miniſters by this Occaſion, is, in this Scarcity of good Preachers, a Puniſhment that lights upon the People, as well as upon the Party. And for the *Subſcription*, it ſeems to me in the Nature of a Confeſſion; and therefore more proper to bind in the Unity of Faith, and to be urged rather for Articles of Doctrine, than for Rites and Ceremonies, and Points of outward Government. For however political Conſiderations and Reaſons of State may require Uniformity; yet chriſtian and divine Grounds look chiefly upon Unity. *The Cap and Surplice.* *Subſcription.*

29. To ſpeak of a *learned Miniſtry*; it is true the Worthineſs of the Paſtors and Miniſters is of all other Points of Religion the moſt ſummary; or the moſt effectual towards the reſt: but here, to my Underſtanding, while Men go on in Zeal to haſten this Work, they are not aware of as great or greater Inconvenience, than they ſeek to remove. For while they inveigh *The Caſe of a Preaching Miniſtry.*

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inveigh againſt a *dumb Miniſtry*, they make too eaſy, and too promiſcuous Allowance of ſuch as they account Preachers; having not Reſpect enough to their Learning in other Arts; which are Handmaids to Divinity; nor Reſpect enough to Years, except it be in caſe of extraordinary Gift; nor Reſpect enough to the Gift itſelf, which many times is none at all. For God forbid, that every Man who can take to himſelf the Boldneſs to ſpeak an Hour together in a Church, upon a Text, ſhould be admitted for a Preacher; tho he mean ever ſo well. I know there is a great Latitude in Gifts, and a great Variety in Auditories and Congregations; but yet ſo as that there is *aliquid infimum*, below which you ought not to deſcend. For you muſt rather leave the Ark to ſhake, as it ſhall pleaſe God, than put unworthy Hands to hold it up. And when we are in God's Temple, we are warned rather to *put our hands upon our Mouth, than to offer the Sacrifice of Fools*. And ſurely it may be juſtly thought, that among many Cauſes of Atheiſm, which are miſerably met in our Age; as Schiſms and Controverſies, profane Scoffings in holy Matters, *&c.* it is not the leaſt that many venture to handle the Word of God, who are unfit and unworthy. And herein I would have no Man miſtake me, as if I extolled curious and affected Preaching; which is as much to be diſliked on the other ſide; and breeds Atheiſm and Scandal as well as the former; (for who would not be offended at one that comes into a Pulpit, as if he came upon the Stage;) neither on the other ſide, would I diſcourage any who have a tolerable Gift.

Propheſying to be reſtored as an Exerciſe.

30. But upon this Point I ground three Conſiderations: *Firſt*, whether it were not requiſite to renew that good Exerciſe practiſed in this Church ſome Years; (tho afterwards put down, indeed by Order from the Church, in regard of ſome Abuſe thereof, inconvenient for thoſe Times; and yet againſt the Advice and Opinion of one of the greateſt and graveſt Prelates of this Land, (and commonly called *Propheſying*; which was this.) The Miniſters within a Precinct met upon a Week-day, in ſome principal Town, where there was ſome ancient grave Miniſter that was Preſident, and an Auditory admitted of Gentlemen, or other Perſons of Leiſure. Then every Miniſter ſucceſſively, beginning with the youngeſt, handled one and the ſame Part of Scripture; ſpending ſeverally ſome Quarter of an Hour or better; and in the whole ſome two Hours: and ſo the Exerciſe being begun and concluded with Prayer, and the Preſident giving a Text for the next Meeting, the Aſſembly was diſſolved. And this was, as I take it, a Fortnight's Exerciſe; which, in my Opinion, ſeems the beſt Way that has been practiſed to frame and train up Preachers to handle the Word of God, as it ought to be handled. For we ſee Orators have their Declamations, Lawyers have their Moots, Logicians their Sophiſms; and every Practice of Science has an Exerciſe of Erudition and Initiation, before Men come to the Life; only Preaching, which is the worthieſt, and wherein it is moſt dangerous to do amiſs, wants an Introduction, and is ventured and ruſhed upon at the firſt: but to this Exer-

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ciſe of *Prophecy*, I could wiſh theſe two Additions: the one, that after this Exerciſe, which is in ſome ſort publick, there were immediately a private Meeting of the ſame Miniſters, where they might brotherly admoniſh one another; and eſpecially the elder the younger; of any thing that had paſſed in the Exerciſe in Matter or Manner unſound and uncomely; and in a Word, might mutually uſe ſuch Advice, Inſtruction, Comfort, or Encouragement, as Occaſion directed; for publick Reprehenſion ſhould be debarred. The other Addition I mean, is, that the ſame Exerciſe ſhould be uſed in the Univerſities for young Divines, before they preſumed to preach, as well as in the Country for Miniſters. For they have in ſome Colleges an Exerciſe called a *Common-Place*; which can in no Degree be ſo profitable; being but the Speech of one Man at one Meeting. And if it be feared, that it may give Occaſion to whet Mens Speech for Controverſies; this is eaſily remedied, by ſome ſtrict Prohibition, that Matters of Controverſy tending any way to the violating or diſturbing the Peace of the Church, be not handled or entered into: which Prohibition, in regard there is ever to be a grave Perſon Preſident, or Moderator, cannot be fruſtrated. *With Additions.*

31. The ſecond Conſideration is, whether it were not convenient that there ſhould be a more exact Probation and Examination of Miniſters: namely, that the Biſhops ſhould not ordain alone, but by Advice: and then that ancient holy Order of the Church might be revived, by which the Biſhop ordained Miniſters but at four ſet Times of the Year; which were called *Quatuor Tempora*; and which are now called *Ember-Weeks:* it being thought fit to accompany ſo high an Action with general Faſting and Prayer, and Sermons, and all holy Exerciſes. And the Names likewiſe of thoſe that were to be ordained, were publiſhed ſome Days before their Ordination; to the end that Exceptions might be taken if juſt Cauſe were. *Examination of Miniſters before Ordination.*

32. The *third* Conſideration is, if it be the Caſe of the *Church of England*, that were a Computation made of all the parochial Churches, allowing the Union of ſuch as were too ſmall and adjacent; and again a Computation made of the Perſons who are worthy to be Paſtors; and upon the ſaid Eſtimate, if it fall out that there are more Churches than Paſtors; then of Neceſſity Recourſe muſt be had to one of theſe Remedies; *viz.* either that Pluralities muſt be allowed; eſpecially if you can by Permutation make the Benefices more compatible; or Preachers to have a more general Charge, to ſupply and ſerve by turn the Pariſhes unfurniſhed: for that ſome Churches ſhould be provided of Paſtors able to teach; and others wholly deſtitute; ſeems to me againſt the Communion of Saints and Chriſtians; and againſt the Practice of the Primitive Church. *How a Sufficiency of Paſtors is procurable.*

33. *Excommunication* is the greateſt Judgment upon Earth; being that which is ratified in Heaven; and a precurſory or preluſory Judgment of the great Judgment of Chriſt in the End of the World. And for this to be uſed irreverently, and to be made an ordinary Proceſs, *Of the Abuſe of Excommunication.*

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to lacky up and down for Fees; how can it be without Derogation to God's Honour, and making the Power of the Keys contemptible? I know very well the Defence thereof, which has no great Force; that it iſſues not for the Thing itſelf, but for the Contumacy. I deny not, but this Judgment is of the Nature of God's Judgments; of the which it is a Model. For as the Judgment of God takes hold of the laſt Sin of the Impenitent, and takes no hold of the greateſt Sin of the Convert or Penitent; ſo Excommunication may in Caſe iſſue upon the ſmalleſt Offence, and in Caſe not iſſue upon the greateſt: but is this Contumacy ſuch a Contumacy wherein Excommunication is now uſed? For Contumacy muſt be ſuch as the Party, ſo far as the Eye and Wiſdom of the Church can diſcern, ſtands in a State of Reprobation and Damnation; as one, who for that time ſeems given over to final Impenitency. Upon this Obſervation I ground two Conſiderations: the *one*, that this Cenſure be reſtored to the true Dignity and Uſe thereof; which is, that it proceed not but in Cauſes of great Weight; and be decreed not by any Deputy or Subſtitute of the Biſhop, but by the Biſhop in Perſon; and not by him alone, but by the Biſhop aſſiſted.

Its Reſtification.

By Permutation.

34. The *other* Conſideration is, that in lieu thereof, there be given to the Eccleſiaſtical Court ſome ordinary Proceſs, with ſuch Force and Coertion as appertains; that thus the Dignity of ſo high a Sentence being retained, and the Neceſſity of a mean Proceſs ſupplied, the Church may indeed be reſtored to the ancient Vigour and Splendor. To this End, joined with ſome other holy and good Purpoſes, there was a Bill brought into Parliament, in the three and twentieth Year of the Reign of Queen *Elizabeth*; which was the graveſt Parliament that I have known; and the Bill was recommended by the graveſt Counſellor of State in Parliament; tho afterwards it was ſtayed by the Queen's ſpecial Command; the Nature of thoſe Times being conſidered.

Non-Reſidents, and Pluralities.

35. For *Non-Reſidence*; except in Caſe of neceſſary Abſence, it ſeems an Abuſe derived form Covetouſneſs and Sloth: for that Men ſhould live of the Flock they do not feed, or of the Altar at which they do not ſerve, can hardly receive a juſt Defence: and to exerciſe the Office of a Paſtor, in Matter of the Word, and Doctrine, by Deputies, is a thing unwarranted. The Queſtions upon this Point ariſe on the Caſes of Exception and Excuſe, which ſhall be thought reaſonable and ſufficient, and which not. For the Caſe of Chaplains; I ſhould think, that the Attendance they give at Court, and in the Houſes and Families of their Lords, were a juſter Reaſon why they ſhould have no Benefice; than why they ſhould be qualified to have two: for as it ſtands with Chriſtian Policy, that ſuch Attendance be in no wiſe neglected; becauſe the Good, which thence enſues to the Church of God, may exceed, or countervail that which may follow from their Labours in any, tho ever ſo large a Congregation; ſo it were reaſonable that their Maintenance ſhould honourably and liberally proceed from thence, where their Labours are employ'd. Neither

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ther are there wanting, in the Church, Dignities and Preferments not joined with any exact Cure of Souls; by which, and by the Hope of which, such Attendants in ordinary may be farther encouraged and rewarded. And as for extraordinary Attendants, they may very well retain the Grace and Countenance of their Places and Duties, at Times incident thereto, without Discontinuance or *Non-Residence* in their Pastoral Charges.

Study.

36. Next, for the Case of attending Studies in the Universities, it will more easily receive an Answer; for Studies do but serve and tend to Practice: and therefore, for that which is most principal and final to be left undone, for the attending of that which is subservient, seems to be against Proportion of Reason. And they proceed well in all Knowledge who couple Study with Practice; and do not first study altogether, and then practise altogether; and therefore they may very well study at their Benefices.

Extraordinary Service of the Church.

37. *Thirdly*, for the Case of extraordinary Service of the Church; as if some Pastor be sent to a general Council, or to Convocation; and likewise for the Case of Necessity, as in the Particular of Infirmity of Body, and the like; every Man will allow there may be some Substitution for such a Time. But the general Case of Necessity is the Case of Pluralities; the Want of Pastors, and Insufficiency of Livings considered; on Supposition that a Man faithfully and incessantly divide his Labours between two Cures: which kind of Necessity I come now to speak of.

Pluralities.

38. For *Pluralities*; in case the Number of able Ministers were sufficient, and the Value of Benefices sufficient, then Pluralities were in no sort tolerable. But we must take heed we desire not Contraries. For to desire that every Parish should be furnished with a sufficient Preacher; and to desire that Pluralities be forthwith taken away; is to desire Things contrary; considering, *de facto*, there are not sufficient Preachers for every Parish: whereto add, that there is not sufficient Living and Maintenance in many Parishes for a Preacher; and it makes the Impossibility yet much greater. The Remedies are but three; *viz. Union*, *Permutation*, and *Supply*. *Union* of such Benefices as have the Living too small, and the Parish not too large, and that are adjacent. *Permutation* to make Benefices more compatible; tho Men be over-ruled to some Loss in changing a better for a nearer. *Supply*, by stipendiary Preachers, to be rewarded with some liberal Stipends, to supply, as they may, such Places which are unfurnished of sufficient Pastors: As Queen *Elizabeth*, among other gracious Acts, erected certain of them in *Lancashire*; towards which Pensions, I see no Reason but Reading Ministers, if they have rich Benefices, should be charged.

The Provision for the Maintenance of the Church.

39. As for *Church Maintenance*; it should well be weighed what is *Jure divino*, and what *Jure positivo*. 'Tis a Constitution of the divine Law, from which human Laws cannot derogate; that those who feed the Flock, should live of the Flock; that those who serve at the Altar,

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ſhould live of the Altar; that thoſe who diſpenſe ſpiritual Things ſhould reap temporal Things: of which it is alſo an Appendix, that the Proportion of this Maintenance be not ſmall or neceſſitous, but plentiful and liberal. Whence, that all the Places and Offices of the Church be provided of ſuch a Dotation, as they may be maintained, according to their ſeveral Degrees, is a Conſtitution permanent and perpetual: but for Particularity of the Endowment, whether it ſhould conſiſt of Tythes, or Lands, or Penſions, or be mixed, might make a Queſtion of Convenience; but no Queſtion of preciſe Neceſſity. Again, that the Caſe of the Church, *de facto*, is ſuch, that there is a Want of Patrimony in the Church, is confeſſed. For the principal Places, namely, the Biſhop's Livings, are in ſome Particulars not ſufficient; and therefore obliged to *Commendams* be ſupplied by Toleration of *Commendams*; things of themſelves unfit, and ever of a bad Report. And for the Benefices and Paſtors Places, it is manifeſt that many of them are very weak and penurious. On the other ſide, that there was a Time when the Church was rather burthened with Superfluity, than with Want, is likewiſe apparent; but it is long ſince; ſo that the Fault was in others, and the Want redounds to us. Again, that it is to be wiſhed Impropriations were returned to the Church, as the moſt proper and natural Endowments thereof, is a Thing likewiſe wherein Mens Judgments will not much vary. Nevertheleſs, that it is an Impoſſibility to proceed now, either to their Reſumption or Redemption, is as plain on the other ſide. For Men are ſtated in them by the higheſt Aſſurance of the Kingdom, which is, Act of Parliament; and the Value of them amounts to much above ten Subſidies; and the Reſtitution muſt of Neceſſity paſs thoſe Hands, where they are now in Poſſeſſion or Intereſt.

Impropriations. 40. But from theſe things, which are manifeſtly true, to draw ſome Concluſions. Firſt, in my Opinion, I muſt confeſs, that all the Parliaments ſince 27 and 31 of *Hen.* VIII. who gave away Impropriations from the Church, ſeem to ſtand in a ſort obnoxious, and obliged to God in Conſcience, to do ſomewhat for the Church, to reduce the Patrimony thereof to a Competency. For ſince they have debarred Chriſt's Wife of her Dowry, it were reaſon they made here a competent Jointure. Next, to ſay that Impropriations ſhould be only charged; that carries neither Poſſibility nor Reaſon. Not Poſſibility, for the Reaſons touched before: Not Reaſon, becauſe if it be conceived, that if any Perſon be charged, it would be a Re-charge, or Double-Charge, inaſmuch as he pays Tythes already, that is a thing miſtaken. For it muſt be remembred, that as the Realm gave Tythes to the Church, ſo the Realm ſince has given Tythes away from the Church to the King; as they may give the eighth or ninth Sheaf. And therefore the firſt Gift being evacuated, it cannot go in Defeaſance, or Diſcharge, of that perpetual Bond, wherewith Men are bound to maintain God's Miniſters. And ſo we ſee in Example, that diverſe well-diſpoſed Perſons, not Impropriators, are

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are content to increaſe their Preachers Livings; which, tho in Law it is but Benevolence, yet before God it is Conſcience. Farther, that Impropriations ſhould be ſomewhat more deeply charged than other Revenues of the like Value, methinks cannot well be denied; both in regard of the ancient Claim of the Church, and the Intention of the firſt Giver: and again, becauſe they have paſſed, in Valuation between Man and Man, ſomewhat at a leſs Rate, in regard of the ſaid Pretence or Claim of the Church, in Conſcience, before God. But of this Point, touching Church Maintenance, I do not think fit to enter into farther Particulars at preſent.

End of the General Supplement to the De Augmentis Scientiarum.

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INSTAURATION.

PART II.

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Novum Organum Scientiarum:

A

NEW MACHINE

For REBUILDING the

SCIENCES;

OR, A

Particular LOGICK for discovering ARTS,

AND

Interpreting the Works of Nature.

WITH

RULES for assisting, conducting, and guarding the UNDERSTANDING in the Search of Truth; and *Examples of* ENQUIRY for raising a solid Structure of UNIVERSAL PHILOSOPHY; and extending the EMPIRE of MAN over the WORKS of the CREATION.

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PREFACE.

AS the following Piece appears to have been the leaſt read of all the Author's Writings, tho' in itſelf of great Importance; 'tis agreeable to our Intention of facilitating the underſtanding of his Philoſophical Works in general, to have a particular regard to the facilitating of this. It ſeems, therefore, proper to give here, by the way of Preparative, Firſt, a ſhort analytical View of the entire Plan, and Deſign of the Piece; and, Secondly, the Rules by which the Author ſeems to have proceeded in it.

The Deſign of the Novum Organum, *was to execute the Second Part of the* INSTAURATION; *by advancing a more perfect Method of uſing the rational Faculty, than Men were before acquainted with; in order to raiſe and improve the Underſtanding, as far as its preſent imperfect State admits; and enable it to conquer and interpret the Difficulties and Obſcurities of Nature.*

With this View it undertakes the Care and Conduct of the Underſtanding; and draws out and deſcribes the Apparatus and Inſtruments that conduce to the true forming, modelling and applying the Power of Reaſoning: whence it appears to endeavour at a new kind of Logick, *tho' greatly ſuperior to the Common, which, thro' the Abuſes crept into it, appears fitter to corrupt than ſtrengthen and improve the Mind. For the Scope and Uſe of this new Logick, is not to diſcover Arguments and probable Reaſons, but Arts and Works.*

It is divided into two principal Parts; viz. *a preparatory Part, and one that is* ſcientificial *and* inſtructive. *The firſt Part tends to prepare and purge the Mind; and fit it to receive and uſe the Inſtructions and Inſtruments laid down in the ſecond: the Mind, like a Mirror, requiring to be levell'd and poliſh'd, or diſcharg'd of its falſe Imagina-*

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tions and perverted Notions, before it can be ſet to receive and reflect the Light of Truth and juſt Information.

And this levelling Part is of four Kinds, with reſpect to the four different Sorts of Idols, *or falſe Notions, that poſſeſs the Mind. Theſe* Idols *are either acquired or natural; and proceed either from the* Doctrines *and* Sects *of Philoſophers, the perverted and corrupt Laws and Methods of Demonſtration; or elſe are innate and inherent in the very Conſtitution of the Mind itſelf. The firſt Labour, therefore, is to diſcharge and free the Mind from it's Swarms of falſe Theories, which occaſion ſuch violent Conflicts and Oppoſitions. The next Point is to releaſe it from the Slavery of perverted Demonſtrations. And the laſt is, to put a Check upon this ſeducing Power of the Mind; and either to pluck up theſe innate* Idols *by the root; or, if that cannot be done, to point them out, that they may be throughly known and watched; and ſo have the Depravities, which they occaſion, corrected. This levelling Part, therefore, is perform'd by three kinds of* Confutation; *viz. the* Confutation of Philoſophies, *the* Confutation of Demonſtrations, *and the* Confutation of the natural unaſſiſted Reaſon.

When thus the Mind is render'd equable and unbiaſſed, the Work proceeds to ſet it in a proper Situation, and, as it were, with a benevolent Aſpect to the remaining Inſtructions; whereby the Buſineſs of preparing the Mind is ſtill further carried on. And the whole Drift of this enſuing Part, is only to poſſeſs Mankind with a juſt Opinion of the whole INSTAURATION *for a time, that they may wait with Patience the Iſſue and Event thereof; upon ſolid Aſſurances of ſome conſiderable Benefit and Advantage from it, when its Scope ſhall come to be well underſtood. And thence it proceeds diſtinctly to obviate all the Objections, and falſe Suſpicions, which may be raiſed about it, thro' the prevailing Notions and Prejudices drawn from religious Conſiderations, thoſe of abſtract Speculation, natural Prudence, Diſtruſt, Levity, &c. Thus endeavouring to pacify and allay every Wind of Oppoſition.*

To render this Preparation ſtill more complete and perfect, the next thing is to raiſe the Mind from the Languor and Torpidity it may contract from the apparent miraculous Nature of the Thing. And as this wrong Diſpoſition of the Mind cannot be rectified without the Diſcovery of Cauſes, the Work proceeds to mark out all the Impediments which have hitherto perverſely retarded and block'd the Way of true Philoſophy; and thus makes it appear no Wonder at all, that Mankind ſhould have been ſo long entangled and perplexed with Errors.

When the Ways of removing theſe Impediments are ſhewn, there follows a Chain of Arguments for eſtabliſhing a ſolid Foundation of Hope

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Hope for the better Succeſs of genuine and ſerviceable Philoſophy in future. For it is hereby demonſtrated, that tho' the Interpretation of Nature, *intended by the* INSTAURATION, *may indeed be difficult; yet much the greater Part of the Difficulties attending it are in the Power of Man to remove, as ariſing from the Nature of the Senſes, and Things themſelves; but only require that the Mind be rectified in order to their Removal. And this firſt* general Part *concludes with an Account of the Excellence of the End in View.*

The preparatory Part being thus diſpatch'd, the Work proceeds to the Buſineſs of Information, the Perfecting of the Underſtanding, and the Delivery of the Art of working with this new Machine *in the* Interpretation of Nature. *This is laid down in three ſeveral Branches, with regard to the* Senſe, *the* Memory, *and the* Reaſon; *each whereof is aſſiſted in its turn.*

The Aſſiſtance afforded to the Senſe ſhews theſe three Things; viz. (1.) *How a* juſt Notion *may be form'd; and how the Report of the Senſes, which is always reſpective to Man, may be rectified, and made correſpondent, or ſet to the Truth of the Univerſe: for no great Streſs is laid upon the immediate Perceptions of the Senſe; but only ſo far as they manifeſt the Motion or Alteration of Things.* (2.) *How thoſe Things which eſcape the Senſes, either thro' the Subtilty of their Wholes, the Minuteneſs of their Parts, the Remoteneſs, Slowneſs, or Velocity of their Motion, the Familiarity of the Object,* &c. *may be brought to the Senſes, and ſubmitted to their Judgment: and in caſe they cannot be thus render'd ſenſible, what is to be done; and how the Senſes are to be aſſiſted upon this failure, either by Inſtruments, or skilful Obſervations of the Degrees they act in, the Indications of proportionate Bodies, from ſuch as are ſenſible to ſuch as are inſenſible, or by other Means and Contrivances to help the Senſes.* (3.) *The Ways are ſhewn of compiling a* Hiſtory of Nature, *and engaging in the Buſineſs of Experiments; what that Hiſtory of Nature ſhould be, which is required for the building up of Philoſophy; and again, what kind of Experiments ſhould be gone upon where that Hiſtory proves deficient: and here certain Suggeſtions and Cautions are occaſionally interſpers'd, for raiſing and fixing the Attention; as much Matter ſeems to be already contained in Natural Hiſtory; and as Experiments long ſince known, are not yet brought into uſe, thro' Inattention of Mind. And thus the Senſes are provided for, as they require Matter and Aſſiſtance: for* Hiſtory *and* Experiments *ſupply the Matter; Subſtitutions ſupply the Defects; and Rectifications correct the Errors of the Senſes.*

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The Memory *is assisted in such a manner, as shews how, from a Multitude of Matters, and a confused Heap of Natural History in general, particular Histories may be deduced, ranged and disposed; so as that the Judgment shall act with Freedom, and perform its Office to Advantage: For a sober Estimation must be made of the Powers of the Mind, without hoping that they may extend to the Infinity of Things; as 'tis manifest that the Memory is unable to comprehend and retain any vast Number of Particulars; or to suggest all those that belong to any particular Enquiry. A Remedy is proposed for the first Defect by this Rule,* That no Enquiry or Discovery be trusted but in writing; *tho' this alone is not sufficient, unless the Matter be thrown into a* regular Table, *at once to assist both the Memory and the Reason.*

And after the Subject of an Enquiry is fix'd upon, well defin'd, distinguished, separated from the Mass of other Things, and set in a clear Light, there are three Assistances afforded the Memory. The First is, to shew what Matters those are which ought to be enquired into with relation to the Subject propos'd; or to suggest particular Heads of Enquiry, from a Survey of the History of Nature. The Second is, to shew in what Order the Things themselves are to be ranged and digested into Tables; *tho' this without expecting to hit upon the true Order of Things originally established in Nature: for the Division here proposed is arbitrary; and only serves to make some Separation of Things, that the Mind may act upon them: as Truth will easier rise from Falshood than from Confusion; and as Reason may easier correct a Division than enter the Mass of a Subject at once. The Third Assistance, is to shew by what Means, and at what Times, an Enquiry is to be renew'd; and how the preceding* Tables *are to be transpos'd and form'd into fresh ones; and how often the Enquiry should be repeated: for the first, or even the second Sett of Tables are not to stand; as being no more than Essays or first Attempts towards an Enquiry. This general Assistance, therefore, to the Memory, consists of three Points; or regard the* (1.) *Heads of Enquiry,* (2.) *the forming of Tables, and* (3.) *the renewing of the Enquiry.*

Assistance is next afforded to the Reason; *for tho' the former Assistances have regard thereto, yet those of themselves do not teach how to form* Axioms; *but only distinct Notions, and a digested History. And here that Assistance to the Reason is most desirable, which best fits it for performing its Office, and obtaining its End.*

The Operation of the Reason, tho' but one thing in itself, is yet double in its End and Use: for the End of Man is either Knowledge and Contemplation, or Action and Execution; so that he desires either to know and consider Causes; or to have a Power and Opportunity

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of producing Effects. Whence 'tis the Intention of human Knowledge to underſtand the Cauſes of an Effect, or Nature aſſign'd, in any Subject; and the Intention of the human Power to procure, or ſuperinduce, within all poſſible Limits, any Effect, or Nature, upon a given Baſis of Matter.

But theſe two Intentions, if duly conſider'd, come in Effect to one and the ſame Thing: for that which in Contemplation holds the Place of the Cauſe, holds, in Operation, the Place of the Means; ſince we underſtand by Cauſes, and operate by Means. So that if all the Means requiſite to the Production of every Work were ready at the Call of Man; there would be no Occaſion for treating theſe two ſeparately. But Mens Power in operating is confin'd to much narrower Bounds than their Knowledge; by Reaſon of their various Neceſſities and Wants: whence they frequently require to the operative Part, not a general and open Knowledge, ſo much as a prudent, ready, and well-vers'd Sagacity in the Choice of ſuch Things as they have at hand; on which account it might ſeem proper to treat the Theory and Practice ſeparate, were it not for the pernicious and inveterate Cuſtom of running into abſtract Notions; which makes it neceſſary to join them together; and accordingly the Author mixes the contemplative with the executive Part. The Contemplative Part *is ſhewn to conſiſt wholly in one Thing; which is no other than the forming of juſt* Axioms, *or Chains of* Axioms, *which are ſolid Portions of Truth; as if they had all three Dimenſions: whereas ſimple Notions are, in compariſon with them, but as Surfaces. And there is no other Way of drawing, and raiſing theſe* Axioms, *but by a legitimate and proper Form of Induction; capable of breaking and ſeparating Experience; and concluding of neceſſity, after all the proper Rejections and Excluſions are made. For 'tis manifeſt, that whatever is concluded by* Induction *of any Kind, is at the ſame Time both diſcovered and judged of; and does not depend upon Principles or Mediums, but ſtands entirely upon its own Foundation, without farther Proof or Support: much more muſt* Axioms, *rais'd by a true and legitimate Form of* Induction, *ſubſiſt from within themſelves; and prove more ſolid, juſt, and certain, than even thoſe call'd Principles. The Author, therefore, is extremely ſollicitous to deliver, with Diligence and Perſpicuity, this whole Affair of* Induction, *or the Doctrine of raiſing* Axioms.

There are found to be three Things of capital Importance in this Buſineſs of Axioms; *and without an Explanation whereof, the Enquiry propoſed, tho' excellent in itſelf, might yet be thought tedious and*

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operoſe in uſe. Theſe three Things are the Method of (1.) *continuing*, (2.) *varying, and* (3.) *contracting an Enquiry; ſo that nothing in the whole Procedure may be left abrupt, contradictory, or be protracted too long, with reſpect to the Shortneſs of Life. The Uſe of the* Axioms *diſcover'd by legitimate Induction is, therefore, next taught; ſo as by their Means to inveſtigate and raiſe up others, of a higher and more general Nature; 'till, by ſure, and uninterrupted Steps, Men come, without Stop or Gap, to the Top-round, or Unity of Nature; there being, at the ſame time, added, a Way of examining and verifying theſe higher* Axioms *by* primary Experiments; *to preſerve them from tumbling back again to Conjectures, Probabilities, and Idols. And this is the Doctrine of the* Continuation of Enquiries.

It was before obſerved, that the practical *or* executive Part, *is, by the Form of* Induction, *continually intermix'd and blended along with the* contemplative Part: *for the Nature of Things is ſuch, that Propoſitions and* Axioms *deduced, by logical Arguments, from general Principles, and derived down to Particulars and Works, give but a very obſcure and uncertain Information; whereas* Axioms, *drawn from Particulars, lead on to new Particulars, as it were, by a manifeſt Correſpondence, and continued Thread. And here Men are required to remember, that in all active or practical Enquiries they muſt perpetually proceed downward, or in the deſcending Scale; which is of no Uſe or Service in contemplative Enquiries: For every Operation conſiſts in Individuals, which are Things of the loweſt Claſs; and therefore muſt be deſcended to by Steps from Generals. Nor, again, is it poſſible to arrive at them by ſimple* Axioms; *for all Works, and the Methods of working, are perform'd and laid out from a Collection of different* Axioms.

This active or practical Doctrine conſiſts of three Parts; the Firſt *whereof propoſes a diſtinct and proper Method of Enquiry, where not a Cauſe nor an Axiom, but the effecting of a Work, is the Point in View, and the Subject of the Enquiry. The* Second *teaches a Method of making* General Practical Tables, *by Means whereof all Kinds of Plans for Works are laid down with greater Eaſe, and Readineſs. The* Third *delivers a certain Method of diſcovering or inveſtigating Works, which, tho' incomplete, has ſtill its Uſes; as, by Means thereof, Men may proceed from Experiment to Experiment, without the raiſing of* Axioms: *for as one* Axiom *leads to another, ſo likewiſe there is a certain Method of Diſcovery open from one Experiment to another: and this Method, tho' uncertain and fallacious, ſtill deſerves to be mention'd.*

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Next are ſhewn the Methods of varying Enquiries, *both according to the different Reaſons for which they are undertaken, and the different Natures of the Things upon which they turn. Where, dropping the Conſideration of* final Cauſes, *which have entirely perverted natural Philoſophy; the Method of varying, turning, and tabling Enquiries is ſhewn; for inveſtigating the* Forms, *or true peculiar diſcriminating Natures and Properties of Things: which, 'till now, was ever look'd upon as a deſperate and hopeleſs Attempt; as well it might, whilſt none but logical Arguments, and caſual Reaſonings, were employ'd about it.*

The Deſign of the Contraction of Enquiries, *is to ſhew the ſhorteſt Ways of coming at the Things ſought for, by cutting acroſs the winding Roads that lead to them indirectly. And here Things are ſhewn to have two Prerogatives, or extraordinary Natures, greatly conducing to the Abridgment of Enquiries;* viz. *one which fits them to be produced as Inſtances; and another for being propoſed as Subjects of Enquiry. It is here ſhewn, therefore, what are the Inſtances, Obſervations, and Experiments, that have a prerogative Light; or excel others in bringing Enquiries to an Iſſue; ſo that a few of them may ſerve inſtead of a larger Number, and thus prevent the Labour of an extraordinary Search, and ſwelling the Bulk of the* Hiſtory. *In the laſt Place 'tis ſhewn, what thoſe* Enquiries *are which ought to lead the Way in the Buſineſs of* Interpreting Nature; *as having a Tendency and Diſpoſition to give Light to all the reſt, either on Account of their extraordinary Certainty, their univerſal Nature, or their Uſefulneſs, and Neceſſity, to mechanic Arts, Inventions, and new Diſcoveries. And thus the Whole is cloſed with pointing out and directing to* Leading Experiments, *and* Leading Enquiries, *for a full Interpretation and Underſtanding of all Nature; and the Production of all neceſſary Works and Effects.*

This is the general Scheme of the Novum Organum; *in the Execution whereof, the Author ſeems to have proceeded upon the Strength and Direction of the following* Aphoriſms, *laid down by himſelf, concerning the Qualifications of a juſt* Interpreter of Nature.

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APHORISMS for a juſt INTERPRETATION of NATURE.

APHORISM I.

AS Man is but the Servant and Interpreter of Nature, he can work and underſtand no farther, than he ſhall, either in Action *or* Contemplation [a], *obſerve of the Proceedings of Nature; to whoſe Laws he remains ſubject.*

APHORISM II.

The Limits, therefore, of the human Power and Knowledge, lie in the Qualifications wherewith Man is by Nature endow'd, for acting *and* perceiving; *and again in the State of Things preſented to him: and beyond theſe Limits his Inſtruments and Abilities can never reach.*

APHORISM III.

Mens Qualifications and Endowments, tho' of themſelves but ſlender, and unequal to the Work; yet, when properly and regularly uſed and applied, are capable of bringing ſuch Things before the Judgment, and into Practice, as lie extremely remote from the ordinary Senſe and Action; and again of conquering greater Difficulties in Works and Obſcurities in Science, than any one at preſent knows ſo much as to wiſh for [b].

APHORISM IV.

As Truth is but one ſimple Thing; ſo likewiſe is the Interpretation of Nature: *but the Senſes are fallacious, the Mind unſtable, and the Cauſe preſſing; yet the Buſineſs of* Interpretation *is rather uncommon than difficult.*

APHORISM V.

He who is not practis'd in doubting, but forward in aſſerting and laying down ſuch Principles as he takes to be approved, granted, and manifeſt; and according to the eſtabliſh'd Truth thereof, receives or rejects

[a] *Viz.* In what we vulgarly call Theory and Practice.

[b] We have many Inſtances hereof in Mathematicks, Mechanicks, Aſtronomy, Opticks, Acouſticks, Chemiſtry, and particularly in the modern Mathematical Philoſophy.

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rejects every thing, as ſquaring with, or proving contrary to them [a]; *is only fitted to mix and confound Things with Words, Reaſon with Madneſs, and the World with Fable and Fiction; but not to interpret the Works of Nature.*

APHORISM VI.

He who does not blend together, and bring into a Maſs, all the vulgar Diſtinctions of Things, and their Names [b], *cannot perceive the Unity of Nature, nor obſerve the true Lines of Things; and, of courſe, cannot interpret.*

APHORISM VII.

He who has not in the firſt Place, and above every thing elſe, throughly examined the Motions of the human Mind; and with the utmoſt Accuracy noted, and made a kind of Map of the Paths of Science, and the Seats of Error therein, will find all Things under a Maſk, or as it were enchanted; and unleſs he breaks the Charm, *can never interpret* [c].

APHORISM VIII.

He who only is vers'd in diſcovering the Cauſes of obvious and compounded Things, ſuch as Flame, Dreams, Fevers, &c. but has no recourſe to ſimple Natures; and firſt to thoſe that are ſuch in popular Eſteem; then to thoſe which are artificially reduced, and as it were ſublim'd to a truer Simplicity; may perhaps, if he otherwiſe errs not, make ſome tolerable Additions (bordering upon Diſcoveries) to the Things already known: but will have no Succeſs in conquering the inveterate and general Prejudices of the Age; and cannot be call'd an Interpreter [d].

APHORISM

[a] Is not this the Manner wherein Philoſophers generally proceed?

[b] *Viz.* He who does not obliterate, or as it were annihilate, in his Mind the vulgar Notions and Terms, which are ſeldom juſt, preciſe and adequate, cannot perceive the Harmony and Conſent of Things; nor obſerve their true Differences, or Lines of Separation; after the Manner that one Country is diſtinguiſhed and ſeparated from another in Maps.

[c] He who does not underſtand Mens Prejudices, Opinions, Kinds and Degrees of Knowledge, Errors, *&c.* can never remove, alter, improve, or redreſs them; and unleſs he finds a Way of entering and convincing the Mind of its Errors, falſe Notions, Superſtitions, and Deluſions, he can never greatly improve and increaſe the Maſs of ſound and ſerviceable Knowledge.

[d] The modern Improvements in the Subject of *Light*, may illuſtrate this Aphoriſm: For till Light was analyſed, or reſolved, from its naturally compounded State, into ſimpler Parts, or Rays of different Colours; no very great Diſcovery was made therein. So that Sir *Iſaac Newton*, in this reſpect, may be call'd the *Interpreter*; and be ſaid to have conquer'd the Prejudices that formerly prevail'd about the Doctrine of Light.

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APHORISM IX.

He who would come duly prepared, and fitted, to the Buſineſs of Interpretation, *muſt neither be a Follower of Novelty, Cuſtom, nor Antiquity; nor indulge himſelf a Liberty of contradicting; nor ſervilely follow Authority. He muſt neither be haſty in affirming, nor looſe and ſceptical in doubting; but raiſe up Particulars to the Places aſſign'd them by their Degree of Evidence and Proof. His Hope muſt encourage him to labour, and not to reſt; he muſt not judge of Things by their uncommon Nature, their Difficulty, or their high Character; but by their juſt Weight and Uſe. He muſt, in his own Particular, carry on his View with Concealment* [a]; *and yet have a due Regard for Poſterity. He muſt prudently obſerve the firſt Entrance of Errors into Truths, and of Truths into Errors; without deſpiſing or admiring any thing. He muſt underſtand his own Talents and Abilities, or the Advantages of his own Nature. He muſt comply with the Nature of others. He muſt, as with one Eye, ſurvey the Natures of Things, and have the other turn'd towards* human Uſes [b]. *He muſt diſtinctly underſtand the mix'd Nature of Words; which is extremely capable both of prejudicing and aſſiſting. He muſt lay it down to himſelf, that the Art of diſcovering will grow up, and improve, along with Diſcoveries themſelves. He muſt not be vain either in delivering or concealing the Knowledge he has acquired; but ingenuous and prudent; and communicate his Inventions without Pride or Ill-nature: and this in a ſtrong and lively Manner, well defended againſt the Injuries of Time, and fit for the Propagation of Knowledge, without occaſioning Errors; and, which is the principal Thing of all, it muſt be ſuch as may ſelect and chuſe for itſelf a prepared and ſuitable Reader* [c].

APHORISM X.

The Interpreter thus qualified, ſhould proceed in this Manner. He muſt firſt conſider the State of Mankind; next remove the Obſtacles in the Way of his Interpretation; and then, coming directly to the Work, prepare a Hiſtory *and regular Setts of* Tables of Invention; *ſhew*

[a] The Author explains the Meaning hereof, ſo far as he thought neceſſary, under Part I. Sect. VII. of the following Piece.

[b] *Viz.* The Uſes of Life, and the Service of Mankind in general.

[c] If the Reader, therefore, ſhould be ſhocked, diſguſted, or unentertained with the following Piece, he may pleaſe to examine himſelf, Whether he be of the Number of thoſe for whom it was deſign'd.

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ſhew the Uſes thereof, their Relations, Dependencies, and Subſerviency to each other. He muſt repreſent how little real and ſerviceable Knowledge Mankind is poſſeſs'd of; and how all juſt Enquiry into Nature has been neglected. He muſt uſe Choice and Judgment in ſingling out and giving the firſt Place to ſuch Subjects of Enquiry, *as are moſt fundamental or important; that is, ſuch as have a principal Tendency to the Diſcovery of other Things, or elſe to ſupply the Neceſſities of Life. He muſt likewiſe obſerve the Preheminency of* Inſtances; *which is a Thing that greatly conduces to ſhorten the Work. And when thus provided, he muſt again renew his Enquiries, draw out freſh* Tables, *and now, with a greater Ripeneſs of Knowledge, more ſucceſsfully enter upon, and perfect the Buſineſs of* Interpretation: *which will thus become eaſy, and follow, as it were, ſpontaneouſly; ſo as in a manner to be ſeaſonably anticipated by the Mind. And when he has done this, he will directly ſee and enumerate, in a pure and native Light, the* true, eternal, and moſt ſimple Motions of Nature; *from the regular and exact Progreſs whereof proceeds all that infinite Variety of the Univerſe. In the mean time, he muſt not, from the very Beginning of the Work, omit, with Aſſiduity, to obſerve and ſet down, many new and unknown Things, for the Service of Mankind; as it were in the Way of Intereſt, 'till they receive the Principal. And afterwards, being wholly intent upon the Diſcovery of* human Uſes [a], *and the State of Things then preſent, he will regulate and diſpoſe all in a different Manner for Practice; aſſigning to the moſt ſecret and hidden Natures* [b], *others that are explanatory thereof; and ſuch as are ſuperinducing to thoſe that are moſt abſent* [c]. *And thus at length he will, like another Nature, form ſuch general* Axioms *of all Knowledge, Works, and Effects, as ſhall rarely err; and if they ſhould, theſe Errors will appear but as Monſters in Nature, and yet leave the Art, by which they were found, unviolated in its Prerogative.*

In this aphoriſtical Manner, the Author proceeds thro' the Whole of the following Piece; which is no more than a continued String of Aphoriſms; *or ſummary Expreſſions of pure Matter of Science, in ſimple*

[a] See above, Aph. IX.

[b] Properties ſuppoſe.

[c] *Viz.* Be enabled to give the Properties of one Body to another; or introduce Properties where they were not: As, to give an incombuſtible Property to Wood; Inflammability to Water; Tranſparency to Metals; Malleability to Glaſs; the Colour and Gravity of Gold to Silver, *&c.* which are at preſent eſteem'd Things either impoſſible or impracticable.

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ſimple Language, without foreign Ornament; and upon the footing of competent Experience and Obſervation. Hence aphoriſtical Writings are rich and pregnant Things, capable of being unfolded, explained, illuſtrated, and deduced into great Variety. Yet an Aphoriſm *differs from an* Axiom; *as a true and perfect* Axiom *is incapable of farther Improvement; but an Aphoriſm ſtill improvable: So that* Aphoriſms *are a kind of imperfect* Axioms, *that ought to point and lead up to the perfect. And as Aphoriſms thus approach to Axioms; we ſhould not deſpair of raiſing an* Axiomatical Philoſophy *upon the Strength of the following Sett.*

INTRO-

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INTRODUCTION.

1. THEY who confidently or magiſterially pronounce of *Nature*, as of a Thing already diſcover'd, have highly injured Philoſophy and the Sciences; and had the Succeſs, not only to enforce a Belief, but to ſtop farther Enquiry. Others, whether from an Averſion to the ancient Sophiſts, Inſtability of Mind, or too large a Meaſure of Knowledge, aſſert, that *nothing is knowable*, and produce no deſpicable Reaſons for their Opinion; tho' they do not derive it from its true Principles: and being carried away with Zeal and Affectation, they have exceeded all Bounds. The ancient *Greeks*, whoſe Writings are loſt, wiſely held a middle Way, between the Arrogance of the former, and the Deſpondency of the latter: and tho' they were frequently complaining of the Difficulty of Enquiries, and the Darkneſs wherein Things are wrapp'd; yet they kept on their Courſe, tho' they champ'd the Bit; without loſing Sight of Nature; as if reſolved not to diſpute, but to try whether any thing were knowable[a]. Yet even theſe, uſing only the Effort of the naked Underſtanding, did not apply the *Rule*; but placed all Things in Subtlety of Thought, and Fluctuation of the Mind. *State of the ancient Philoſophies.*

2. The Thing we propoſe, is to ſettle the Degrees of Certainty; to guard the Senſe by a kind of Reduction[b]; generally to reject that Work of the Mind which is conſequent to Senſe; and to open and prepare a new and certain Way for the Mind, from the immediate Perceptions of the Senſes. And thus much was, doubtleſs, intended by thoſe who have ſo highly magnified the Art of Logic: which plainly ſhews they ſought for ſome Aſſiſtances to the Underſtanding; and held the natural Procedure, and ſpontaneous Motion of the Mind ſuſpect. But this Remedy came too late, after the Mind was poſſeſſed, and polluted by Cuſtoms, Le- *Deſign of the Work.*

[a] See hereafter, *Sect.* IV.

[b] *Viz.* By contriving Ways of ſubmitting Things, in a proper manner, to the Senſes; that a true Judgment may be formed of them, when thus again brought under View.

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ctures, and Doctrines; and filled with vain *Idols* [c], or *false Notions*. Whence this Superinduction of Logic, far from correcting what was amiss, rather fix'd the Errors of the Mind, than open'd a Way to Truth. The only Remedy left is, therefore, to begin the whole Work of the Mind anew; and, from the very first, never leave it to itself; but keep it under perpetual Regulation, as if the Business were perform'd by a *Machine* [d]. And indeed, if Men had set about mechanical Works, with their bare Hands, unassisted with Instruments; as they have ventured to set about intellectual Works, almost with the naked Powers of the Mind; they would have found themselves able to have effected very little, even tho' they combined their Forces. If some large Obelisk were to be raised; would it not seem a kind of Madness, for Men to set about it with their naked Hands? And would it not be greater Madness still to increase the Number of such naked Labourers, in Confidence of effecting the Thing? And were it not a farther Step in Lunacy, to pick out the weaker bodied, and use only the robust and strong; as if that would certainly do? But if, not content with this, recourse should be had to anointing the Limbs, according to the Art of the ancient Wrestlers; and then all begin afresh; would not this be raving, with Reason? Yet this is but like the wild and fruitless Procedure of Mankind in Intellectuals; whilst they expect great Things from *Multitude* and *Consent*; or the Excellence and Penetration of Capacity; or strengthen, as it were, the Sinews of the Mind with Logic. And yet, for all this absurd Bustle and Struggle, Men still continue to work with their naked Understandings. At the same time, it is evident, that in every great Work, which the Hand of Man performs, the Strength of each Person cannot be increased; nor that of all be made to act at once, without the Use of Instruments and Machines [e].

Interferes not with the Ancients.

3. Upon the whole, Men are here to be reminded of two Things; (1.) That it fortunately happens, to prevent all Controversy and Elation of Mind, that the Ancients will remain undisturb'd in the Honour and Reverence due to them; whilst we pursue our own Design, and reap the Fruits of our Moderation. For if we should pretend to produce any thing better than the Ancients, yet proceed in the same Way as they did; we could, by no Art of Words, prevent some apparent Rivalship in Capacity, or Ability: and however allowable this might be, as it is a Liberty they took before us; yet we should know the Inequality of our own Strength, and not stand the Comparison. But now, as we go upon opening a quite new Way for the Understanding, untried and unknown to the Ancients; the Case changes, and all Party and Contest drops. (2.)

[c] See hereafter, *Sect.* II. *Aph.* 37.

[d] Hence we may learn the Reason of the Tit'e, *Novum Organum*; tho' doubtless the Author also intended some Allusion to the *Organon*, or Logick of *Aristotle*.

[e] The Foundation of the *Novum Organum* seems laid in this Paragraph; so that if this be not found just, the Superstructure must fall of course.

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(2.) That we are no way bent upon disturbing the present Philosophy, or any other that is, or shall appear, more perfect: the common System, and others of the same Kind, may continue, for us, to cherish Disputes, embellish Speeches, &c. the Philosophy we would introduce, will be of little Service in such Cases: nor is ours very obvious, and to be taken at once; nor tempting to the Understanding; nor suited to vulgar Capacities; but solely rests upon its Utility and Effects. Let there be, therefore, by joint Consent, two Fountains, or Dispensations, of Doctrine; and two Tribes of Philosophers, by no means Enemies or Strangers, but Confederates and mutual Auxiliaries to each other: and let there be one Method of cultivating, and another of discovering the Sciences. And to those who find the former more agreeable, for the sake of Dispatch, or upon civil Accounts, or because the other Course is less suited to their Capacities, (as must needs be the Case with far the greater Number;) we wish Success in their Procedure; and they may obtain their Ends. But if any one has it at heart, not only to receive the Things hitherto discover'd, but to advance still farther; and not to conquer an Adversary by Disputation, but to conquer Nature by Works; not neatly to raise probable Conjectures, but to know Things of a certainty, and demonstratively; let him, as a true Son of the Sciences, join Issue with us, if he pleases: that, leaving the Entrance of Nature, which infinite Numbers have trod, we may, at length, pass into her *inner Courts* [f]. To make our selves still more intelligible, we shall give Names to these two Methods of Procedure; and familiarly call the first the *Anticipation of the Mind*; and the other the *Interpretation of Nature*.

Philosophers reduced to two Tribes.

4. And now, we have only this Request to make; that as we have bestowed much Thought and Care [g], not only that what we offer should be true; but also, as much as is possible, that it should be accessible to the human Mind, tho' strangely beset and prepossessed; we entreat it, as a Piece of Justice at the Hands of Mankind, if they would judge of any thing we deliver, either from their own Sense, the Cloud of Authorities, or the Forms of Demonstration, which now prevail, as so many *judicial Laws*; that they do it not on the sudden, and without Attention; but first master the Subject; by degrees make Trial of the Way we chalk out; and accustom themselves to that Subtilty of Things, which is imprinted in Experience; and, lastly, that by due and seasonable Perse-

Requisites to judging of the Work.

[f] Notwithstanding this Distinction, the Author has been suspected to oppose the Ancients: tho' his Design every where is to make use of all the Assistance they afford, fit for the Purpose; and to advance the Whole of Philosophy to a greater Perfection. But how few Helps and Materials, for this Purpose, are derivable from the Ancients, is another Consideration. See *Supplem.* X. and hereafter *Sect.* IV. See also hereafter, *Aph.* 31, &c.

[g] The Author wrote the following Piece twelve Times over, with his own Hand; making it a Rule to revise, correct, and alter it once a Year, till he brought it to the present degree of Perfection. And whoever desires to see how far it was, by this means, improved, may compare it with the *Cogitata & Visa*, published by *Gruter*; which was the rough Draught of the first Book only, of the *Novum Organum*; and sketched out, at least thirteen, if not many more, Years before the Publication of this Piece: for Sir *Tho. Bodley*, in the Year 1607, complains of the Author for having kept it so long in his Coffer.

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verance, they correct the ill Habits that closely adhere to the Mind: and when thus they begin to be themselves, let them use their own Judgment, and welcome[h].

[h] Tho' this Request might be more necessary, at the Time the Author made it; yet perhaps it is not still unseasonable: for, possibly, the generality, even of Philosophers, are not to this Day, sufficiently divested of Preoccupation, Party, and Prejudice, to form a true Judgment of what the Author wrote so long ago.

Novum

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Novum Organum Scientiarum:

A

NEW MACHINE

For REBUILDING the

SCIENCES.

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PART I.

SECT. I.

General APHORISMS *for interpreting* NATURE; *and extending the Empire of Man, over the Creation.*

APHORISM I.

1.
MAN, who is the Servant and Interpreter of Nature, can act and underſtand no farther than he has, either in Operation, or in Contemplation, obſerved of the Method and Order of Nature [a]. *Man's Power, how limited.*

APHORISM II.

2. Neither the Hand without Inſtruments, nor the unaſſiſted Underſtanding, can do much; they both require Helps, to fit them for Buſineſs: and as Inſtruments of the Hand, either ſerve to excite Motion, or direct it; ſo the Inſtruments of the Mind, either ſuggeſt to, or guard and preſerve the *Underſtanding* [b]. *Man requires Inſtruments.*

APHORISM

[a] Human Knowledge is acquired by *Obſervation*, and *Experience*; or by converſing with the Things about us, thro' the Mediation of the Senſes, and ſubſequent Reflexion: therefore, the more we obſerve and try; the more we learn and are enabled to perform. And thus Knowledge and Power go hand in hand: ſo that the way to increaſe in Power, is to increaſe in Knowledge. The *Europeans* exceed the ſavage *Indians* in Power, by having a ſuperior Knowledge of *Arts*, *Arms*, &c. See *Apt.* 3.

[b] This Aphoriſm in another Place is turn'd thus. "The naked and *unaſſiſted Hand*, however ſtrong and true, is adapted only to the Performance of a few eaſy Works; but when aſſiſted by Inſtruments, becomes able to perform abundance more, and of much greater difficulty: and the Caſe is exactly the ſame with the Mind." The Whole will be abundantly explained and illuſtrated by what follows. See alſo *Introduction*, §. 2 and 3.

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APHORISM III.

Power and Knowledge coincide.

3. The *Knowledge* and *Power* of Man are coincident: for whilſt ignorant of Cauſes, he can produce no *Effects:* Nor is Nature to be conquer'd but by Submiſſion [c]. And that which in *Speculation* ſtands for the *Cauſe*; is what in Practice ſtands for the *Rule* [d].

APHORISM IV.

4. In Works, Man can do no more than put natural Bodies together, and take them aſunder: all the reſt is perform'd by the internal Operations of Nature.

APHORISM V.

Arts and Sciences imperfect.

5. The *Mechanic*, the *Mathematician*, the *Phyſician*, the *Chemiſt*, and the *natural Magician*, are concern'd in the Works of Nature; but, all of them, at preſent, *ſuperficially*, and to little purpoſe [e].

APHORISM VI.

6. 'Tis Madneſs, and a Contradiction, to expect that Things which were never yet perform'd, ſhould be effected, except by Means hitherto untried.

APHORISM VII.

7. The Productions of the *Mind* and *Hand*, ſeem exceedingly numerous in *Books* and *Works*; yet all this Variety ariſes from the particular ſubtilizing

[c] *Viz.* By condeſcending to enquire into, and obſerve her Methods of working; as a Servant who would learn of his Maſter. For no Power of Man can poſſibly break the Chain of natural Cauſes; ſo that the only Method whereby Men can rule Nature, muſt depend upon learning her Ways.

[d] This Aphoriſm is otherwiſe expreſſed by the Author in another Place; thus. "The *human Power* has this for its *Object*; to impoſe or introduce any *Nature* upon a given Baſis of Matter, within the Condition of Poſſibility; and the *Object* of the *human Knowledge* is the Diſcovery of the Cauſes of an Effect aſſign'd, in any Subject. And theſe are two *coincident Intentions:* for what in Contemplation is aſſign'd as the Cauſe, is in Operation the Means of producing the Effect." And again, thus. "There is, in Fact, no difference betwixt a *theoretical* and *practical Propoſition:* thus to aſſert that Light belongs not to the Nature of Heat; is the ſame as to aſſert, that in the Production of Heat there is no neceſſity for the producing of Light." This Matter alſo will be fully illuſtrated hereafter; tho' it be indeed ſelf-evident upon a little Attention.

[e] This Aphoriſm is more fully deliver'd in another Place; thus. "The Knowledge of which Mankind are hitherto poſſeſſed, does not reach to Certainty; and the Production of great Effects. Phyſicians pronounce many Diſeaſes incurable; and frequently miſtake and fail in the Cure of the reſt: the Alchemiſt never relinquiſhes his Hopes: the Works of the natural Magician are unſtable, and of little Advantage: the mechanic Arts derive no great Light from Philoſophy; and but languidly proſecute Experiments in low and trivial Subjects; ſo that the Diſcoveries at preſent in uſe are extremely crude, and far from perfect.

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tilizing upon, and applying, a few known Things; and not from any Number of *Axioms* [f].

APHORISM VIII.

8. Nay, the Works hitherto discover'd, are owing rather to *Accident* and *Trial*, than the *Sciences*; which, as they now stand, are nothing but *Compilements* of Things found out before; and not *Methods of Enquiry*, or *Plans of new Works*.

APHORISM IX.

9. The Root of all the Mischief in the Sciences, is this; that *falsly magnifying and admiring the Powers of the Mind, we seek not its real Helps*.

APHORISM X.

10. The Subtilty of Nature, far exceeds the Subtilty of the Sense and Understanding; so that the sublime *Meditations*, *Speculations*, and *Reasonings* of Men, are but a kind of Madness; if a fit Person were to observe them [g].

APHORISM XI.

11. As the *Sciences* now in being, are useless in the Discovery of Works; so is the present Logic in the Discovery of the *Sciences* [h] *Logic.*

APHORISM XII.

12. The common *Logic* is better fitted to fix and establish Errors, which are founded in vulgar Notions, than for searching after Truth; so as to be more prejudicial than useful [i].

APHORISM XIII.

13. *Syllogism* is not applied to the Principles of the *Sciences*; and 'tis in vain applied to intermediate *Axioms* [k]; as being unequal to the Sub- *Syllogism.*

[f] Thus the numerous Books wrote upon Religions, Laws, Morality, *&c.* may be reduced back to a few Particulars, which gave them Origin; and the Arts of Glass, Medicine, the modern Art of War, *&c.* to the casual Observation of Ashes melted by Heat, the accidental Discovery of Simples, Gun-powder, *&c.* whereas had all these proceeded from the Light of *Axioms*; they would have proved much more perfect, serviceable, and advantagious: But the Axioms are wanting for this Purpose.

[g] This Aphorism deserves Attention. Certainly, upon examining, every Man may find his common Notions of Things very inadequate; or far from corresponding even with those he gains by conversing more familiarly and intimately with Nature. And yet, after a Life spent upon any particular Enquiry, in the common Method, there still usually remains some Subtilty of Nature behind, which we cannot catch; and are apt, perhaps very extravagantly, to guess at. And if this be the Case in sensible and material Things; what must our general Theories and Systems be?

[h] This seems to have been fully shewn in the *de Augmentis Scientiarum.*

[i] This Matter has also been discussed in the *de Augmentis Scientiarum.*

[k] See below, *Aph.* 19.

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tilty of Nature: and therefore catches the Aſſent; but lets Things themſelves ſlip through [l].

APHORISM XIV.

14. *Syllogiſm* conſiſts of Propoſitions, Propoſitions of Words, and Words are the Signs of Notions; therefore, if our Notions, the Baſis of all, are confuſed, and over haſtily taken from Things; nothing that is built upon them can be firm: whence our only Hope reſts upon *genuine Induction* [m].

APHORISM XV.

Notions not ſafely truſted.

15. No *Notion* can be ſafely truſted, either in *Logics* or *Phyſics*; not even thoſe of *Subſtances*, *Qualities*, *Actions*, *Paſſions*, and *Exiſtence*; much leſs thoſe of *Gravity*, *Levity*, *Denſity*, *Tenuity*, *Moiſture*, *Dryneſs*, *Generation*, *Corruption*, *Attraction*, *Avoidance*, *Element*, *Matter*, *Form*, &c. but all are phantaſtical, and ill defined [n].

APHORISM XVI.

16. The *Notions* of the *lower Species*, as of a *Man*, a *Dog*, a *Dove*; and the immediate Apprehenſions of Senſe [o], as *Heat*, *Cold*, *White*, *Black*, &c. do not greatly deceive us; tho' theſe alſo are ſometimes greatly confounded by the flowing in of Matter, and the putting of Things together. And for all the reſt, which Mankind have hitherto employ'd, they are miſtaken; or not duly abſtracted, and raiſed, from Things [p].

APHORISM XVII.

17. Nor is there leſs Licentiouſneſs, or fewer Miſtakes, in the *raiſing of Axioms*, than in the *forming of Notions*; and this even in Principles themſelves, which depend upon the vulgar *Induction* [q]: much more in the inferior *Axioms*, and *Propoſitions*, deduced by Syllogiſm.

APHORISM

[l] See the next Aphoriſm.

[m] *Viz.* A competent Catalogue of *Inſtances*, on both Sides of the Queſtion; ſo that when all the Exceptions are properly made, a ſound, or at leaſt a ſerviceable, Portion of Truth may be left, as an *Axiom*, behind. See *Aph.* 105, 106.

[n] Mr. *Locke*'s Chapter of *Idea's*, in his Eſſay upon *Human Underſtanding*, is a kind of Comment upon this Aphoriſm.

[o] Now commonly called *Senſations*.

[p] See Mr. *Locke*'s Eſſay upon *Human Underſtanding*.

[q] The vulgar *Induction*, to explain it in a familiar manner, is that Method of arguing which Men uſe, when they ſay, *I'll give you an Inſtance*; and then produce a Caſe, or ſeveral Caſes, wherein their Propoſition holds. And in the ſame manner, the common *Logical Induction* proceeds upon an Enumeration of particular Inſtances, or Examples; but without a due Regard to thoſe that may be produced on the contrary, or negative Side: ſo that this Induction is abſolutely unſafe and trifling; as being liable to be ſet aſide by the contradictory Inſtances, whenever they ſhall appear. And this we ſee frequently happens, both in Diſcourſe and Writing. What the Author's Method of Induction is, may appear from the Note upon *Aph.* 14. above; but more fully hereafter, *Aph.* 105, 106. and in the Second Part of this Piece.

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APHORISM XVIII.

18. All hitherto discover'd in the *Sciences*, falls nearly under vulgar Notions: but to proceed farther into Nature, 'tis requisite that both *Notions* and *Axioms* be form'd from Things, in a surer and more guarded Manner; and that a better and more certain Way of *working with the Understanding* be introduced.

APHORISM XIX.

19. There are two Ways of searching after, and discovering Truth: the one, from Sense and Particulars, rises directly to the most general *Axioms*; and resting upon these Principles, and their unshaken Truth, finds out intermediate *Axioms:* and this is the Method in use. But the other raises *Axioms* from Sense and Particulars, by a continued gradual Ascent; till at last it arrives at the most general *Axioms:* which is the true Way; but hitherto untried[r]. *Two Ways of discovering Truth.*

APHORISM XX.

20. The Understanding, when left to itself, takes the first of these Ways; and prepares it in logical Order: for the Mind delights in springing up to the most general Axioms; that it may find rest. But after a short Stay here, it disdains Experience: and these Mischiefs are at length increased by *Logic*, for the Ostentation of Dispute[s]. *The Action of the unassisted Understanding.*

APHORISM XXI.

21. The Understanding being left to itself, in a sober, patient, and sedate Genius; and especially if unprejudiced by any former Doctrine; will make some Attempt in the second or right Way; but to little Advantage: for unless regulated and assisted, the Understanding is here very unequal, and absolutely unfit to conquer the Obscurity of Things. *Its Action in a sober Genius.*

APHORISM XXII.

22. Both these Ways begin with Sense and Particulars; and end in the most general Principles: but they otherwise differ immensely. The one lightly passes over Experience and Particulars; which the other duly and orderly dwells on: the former constitutes certain abstract and *The difference of the two Ways of discovering Truth.*

[r] And upon this Way it is that the Author rests his greatest Hopes of improving Philosophy and the Sciences. See hereafter, *Aph.* 105.

[s] There is scarce a more pernicious Thing to Philosophy, than the common Practice of disputing with Heat, and a hasty turbulent Use of Syllogism. These kind of captious and sophistical Contests are as the Fevers of the Reason.

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uſeleſs Generals from the Beginning; but the latter riſes gradually to ſuch as Nature really acknowledges [t].

APHORISM XXIII.

False Images of the Mind.

23. There is a wide Difference betwixt the *Idols of the human Mind*, and the *Ideas of the divine Mind:* that is, betwixt certain vain Conceits, and the real Characters and Impreſſions ſtamp'd upon the Creatures, as they are found [u].

APHORISM XXIV.

Axioms raiſed by Arguments uſeleſs in Works.

24. 'Tis impoſſible that *Axioms*, raiſed by Argumentation, ſhould be uſeful in diſcovering new Works; becauſe the Subtilty of Nature vaſtly exceeds the Subtilty of Argument [w]: But Axioms, duly and methodically drawn from Particulars, will again eaſily point out new Particulars; and ſo render the Sciences active [x].

APHORISM XXV.

The common Axioms, how form'd.

25. The *Axioms* in uſe, being derived from ſlender Experience, and a few obvious Particulars, are generally applied in a correſponding manner: No wonder, therefore, they lead us not to new Particulars. And if any Inſtance unobſerved before happens to turn up; the *Axiom* is preſerved, by ſome trifling diſtinction, where it ought rather to be corrected [y].

APHORISM XXVI.

The Anticipation, and Interpretation of Nature, what.

26. The natural human Reaſoning, we, for the Sake of Clearneſs, call the *Anticipation of Nature*; as being a raſh and haſty Thing [z]: and the Reaſon duly exerciſed upon Objects, we call the *Interpretation of Nature.*

APHORISM XXVII.

The Force of Anticipation.

27. This *Anticipation* has Force enough to procure Conſent [a]; for if all Mankind were mad, in one and the ſame manner, they might ſtill agree among themſelves.

APHORISM

[t] That is, ſuch as Men may ſafely proceed upon, in producing Effects: for being drawn from Nature, they readily find the Way to Nature again; and in this Senſe are acknowledged by her, as her own.

[u] See above, *Aph.* 10. Aſtronomers diſtinguiſh betwixt the real and apparent Motions of the Heavens; the one being reſpective to Man, and the other to the Truth; or ſuppoſing an Obſerver ſeated in the Centre of the Syſtem. This may, perhaps, illuſtrate the preſent Aphoriſm.

[w] To depend upon Argumentation, or the common Method of Reaſoning, in Phyſical Enquiries, is working only with Words and Thoughts, where manual Operations, and Experiments are required.

[x] See above, *Aph.* 22.

[y] Has not this been generally the Caſe, from the Time of *Ariſtotle* to the preſent?

[z] See above, *Aph.* 20. See alſo *Introduction*, §. 3.

[a] Is it not alſo the chief Spring of human Actions?

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APHORISM XXVIII.

28. *Anticipations*, alſo, have a much greater Power to entrap the Aſſent, than *Interpretations*; becauſe, being collected from a few familiar Particulars, they immediately ſtrike the Mind; and fill the Imagination: whereas *Interpretations*, being ſeparately collected from very various and very diſtant Things, cannot ſuddenly affect the Mind; whence, of neceſſity, in difficult and paradoxical Matters, theſe *Interpretations* appear almoſt like MYSTERIES OF FAITH [b].

APHORISM XXIX.

29. In the Sciences founded on Opinion and Decree, *Anticipations* and *Logic* are of great Service; where not Things, but the Aſſent is to be brought under Subjection [c]. *The proper Uſe of Anticipation and Logick.*

APHORISM XXX.

30. But tho' the Labours and Capacities of the Men in all Ages were united and continued, they could make no conſiderable Progreſs in the Sciences, by *Anticipation*; becauſe the radical Errors, in the firſt Concoction of the Mind, are not to be cured by the Excellence of any ſucceeding Talents and Remedies [d]. *Anticipation of no Service in the Sciences.* NB.

APHORISM XXXI.

31. And 'tis in vain to expect any great Advancement of the Sciences, by ſuperinducing or engrafting new Inventions upon old: The Reſtoration muſt be begun from the very Foundation; unleſs Men chuſe to move continually in a Circle, without conſiderably advancing. *The Sciences not greatly advanced by engrafting new Inventions on old.*

APHORISM XXXII.

32. All the ancient Authors will ſtill remain poſſeſſed of their Honour; and unrival'd in their Genius and Ability: as we only point out a new Path, without cenſuring their Proceedings.

APHORISM XXXIII.

33. No true Judgment can by *Anticipation* be form'd of this new Method of ours; nor of the Things it diſcovers: for they cannot, in Juſtice, be tried *The preſent Undertaking not to be judged of by* Anticipation.

[b] This Aphoriſm ſeems capital, or almoſt Axiomatical: 'tis made great uſe of hereafter; and requires to be well remember'd.

[c] See the *de Augm. Scient.* Sect. XVIII. See alſo the Fable of *Orpheus*, explained in the *Sapientia Veterum*, Sect. I. Fab. 3.

[d] Let this Aphoriſm be well conſider'd; and, if found juſt, remember'd.

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tried by the Method of Reaſoning at preſent uſed; which is itſelf called in Queſtion [e].

APHORISM XXXIV.

34. Nor is it an eaſy Matter to deliver, or explain, what we have to produce; becauſe Things new in themſelves will ſtill be underſtood from their relation to the old [s].

APHORISM XXXV.

Confutations, where of no Service.

35. *Confutations* are of no Service, where Men differ about Principles, Notions, and the Forms of Demonſtration [f]: and our Deſire is not Victory; but only to find the Minds of Men prepared, and capable of receiving what we offer.

APHORISM XXXVI.

The Courſe obſerved by the Author.

36. We have but one ſimple Way left us; and that is leading Mankind to Particulars; their Series, and their Orders: whilſt they prevail upon themſelves to forſake their *Notions* for a Time; and begin an Acquaintance with Things [g].

APHORISM XXXVII.

37. Our Method has ſome Reſemblance with that of the *Sceptics*, at the Entrance; but differs widely from it, and becomes oppoſite to it, in the End. They ſimply aſſert, that nothing is knowable; and we ſay, that much cannot be known of Nature, in the common Way: but then they deſtroy the Authority of the Senſe and Underſtanding; whereas we ſupply them both with Helps [h].

[e] The common Talent has, however, been employ'd upon this Performance; and ſome other Parts of the *Inſtauration*. There are remarkable Inſtances of it in *Alexander Roſs*, Dr. *Stubbs*, and certain *French* Authors. Sir *Tho. Bodley*'s Letter to the Author, relating to the *Cogitata & Viſa*, is alſo a Thing of this Kind, that may well deſerve to be read, in order to keep the Mind from inclining too much to Novelty. See *Vol.* I. *Supplem.* V. *Sect.* II.

[s] See hereafter, *Aph.* 109.

[f] Yet are not moſt *Confutations* of this Kind?

[g] The Things here intended, the Author propoſed to ſelect with Judgment; as they ſhould appear moſt uſeful in themſelves; fitteſt for raiſing of Axioms; enriching the Underſtanding, *&c.* and to range them in ſome proper Order, or in the Form of regular Tables; that the Mind might act to Advantage upon them, without Diſtraction or Confuſion. This he principally deſigned in the *Scala Intellectûs*: and his *Hiſtory of Life and Death*, and *Hiſtory of Winds*, are capital Inſtances of the Kind.

[h] This will be explained and illuſtrated, by a Variety of Examples, in the Second Part of the Work.

SECT.

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SECT. II.

Of the false Images, *or* Idols, *of the* MIND.

APHORISM XXXVIII.

1. THE *Idols* [i], and false Notions of the Mind, take such Root therein, and so possess it, that Truth can hardly find Entrance: and even when it is enter'd, these will again rise up, and grow troublesome, in the rebuilding of the Sciences; unless Men guard against them, with all possible Diligence [k]. *Idols, what.*

APHORISM XXXIX.

2. There are four Kinds of *Idols* that possess the Mind of Man. In order to be the better understood, we will assign Names to them; and call the first Kind, *Idols of the Tribe*; the second, *Idols of the Den*; the third, *Idols of the Market*; and the fourth, *Idols of the Theatre*. *Their Kinds.*

APHORISM XL.

3. The raising of Notions and Axioms by *legitimate Induction* [l], is doubtless the proper Remedy for removing and driving out the Idols of the Mind; yet the *Indication of Idols* [m] is a thing of great Use: the Doctrine of them being to the *Interpretation of Nature*, what the Doctrine of the Confutation of *Sophisms* is to the common *Logic*.

APHORISM XLI.

4. *Idols of the Tribe* have their Foundation in human Nature, and the whole Tribe or Race of Mankind: for it is a false Assertion, that the human *Idols of the Tribe, what.*

[i] The Author here seems to have made a happy Choice of the Word *Idol*; which elegantly distinguishes false Science from true: as erroneous Knowledge is a kind of Idolatry; or a Worship paid to false Gods, which is only due to the true One.

[k] The Doctrine of *Idols* has been already open'd in the *de Augment. Scientiar.* Sect. XIV.

[l] See above, *Aph.* 14.

[m] *Viz.* The discovering or pointing of them out.

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human Senſe is the Meaſure of Things; ſince all Perceptions, both of the Senſe and Mind, are with relation to Man, and not with relation to the Univerſe [n]. But the human Underſtanding is like an unequal Mirror to the Rays of Things; which, mixing its own Nature with the Natures of Things, diſtorts and perverts them [o].

APHORISM XLII.

Idols of the Den, what.

5. *Idols of the Den*, are the Idols of every Man in particular [p]; for, beſides the general Aberrations of human Nature, we every one of us have our peculiar *Den* or *Cavern*; which refracts and corrupts the Light of Nature: either becauſe every Man has his reſpective Temper, Education, Acquaintance, Courſe of Reading, and Authorities: or becauſe of the Differences of Impreſſions, as they happen in a Mind prejudiced or prepoſſeſſed; or in one that is calm and equal, *&c.* So that the human Spirit, according to its Diſpoſition in Individuals, is an uncertain, very diſorderly, and almoſt accidental thing. Whence *Heraclitus* well obſerves, that Men ſeek the Sciences in the leſſer Worlds; and not in the great or common one [q].

APHORISM XLIII.

Idols of the Market, what.

6. There are alſo *Idols* that have their Riſe, as it were, from Compact, and the Aſſociation of Mankind; which, on Account of the Commerce and Dealings that Men have with one another, we call *Idols of the Market*. For Men aſſociate by Diſcourſe; but Words are impoſed according to the Capacity of the Vulgar: whence a falſe and improper Impoſition of Words ſtrangely poſſeſſes the Underſtanding. Nor do the Definitions and Explanations, wherewith Men of Learning, in ſome Caſes, defend and vindicate themſelves, any way repair the Injury: for Words abſolutely force the Underſtanding, put all Things in Confuſion, and lead Men away to idle Controverſies and Subtleties, without Number [r].

APHORISM XLIV.

Idols of the Theatre, what.

7. Laſtly, there are *Idols* which have got into the human Mind, from the different Tenets of Philoſophers; and the perverted Laws of Demonſtration.

[n] Philoſophers ſhould, if poſſible, conceive of Things as they are Parts of the Univerſe; and as they have their Office and Uſe therein: but Men generally conſider Things only as they have ſome particular relation to the Senſe; which cannot poſſibly diſcover the ſyſtematical or coſmical Qualities and Uſes of Things.

[o] See above, *Aph.* 23. and hereafter, *Aph.* 45.

[p] The Author, in another Place, conſiders this kind of Idol, as every Man's particular *Dæmon*, or ſeducing Familiar; and again, he conſiders every Man's Mind as a Glaſs, with its Surface differently cut, ſo as differently to receive, reflect, and refract the Rays of Light that fall upon it.

[q] See the *de Augm. Scient.* Sect. X.

[r] See Mr. *Locke*'s Eſſay upon *Human Underſtanding*; and the Author's *de Augm. Scient.* Sect. XVI, *&c.* particularly ſee below, *Aph.* 59.

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ſtration. And theſe we denominate *Idols of the Theatre*; becauſe all the Philoſophies that have been hitherto invented or received, are but as ſo many Stage-Plays, written or acted; as having ſhewn nothing but fictitious and theatrical Worlds. Nor is this ſaid only of the ancient or preſent Sects and Philoſophies; for numberleſs other Fables, of the like Kind, may be ſtill invented and dreſs'd up; ſince quite different Errors will proceed from almoſt the ſame common Cauſes. Nor, again, do we mean it only of general Philoſophies; but likewiſe of numerous *Principles* and *Axioms* of the Sciences, which have prevailed thro' Tradition, Belief, and Neglect. But theſe ſeveral Kinds of *Idols* muſt be more fully and diſtinctly ſhewn, that the Mind may be upon its Guard againſt them.

APHORISM XLV.

8. The Mind has this Property, that it readily ſuppoſes a greater Order and Conformity in Things, than it finds: and tho' many Things in Nature are ſingular, and extremely diſſimilar; yet the Mind is ſtill imagining Parallels, Correſpondencies, and Relations between them; which have no Exiſtence. Hence the Fiction, that all the celeſtiall Bodies moved in perfect Circles; hence the fictitious Element of Fire, with its Orb, was added to the three ſenſible Elements, to make them four; and ſuch kind of Dreams. Nor does this Folly prevail only in Tenets, but alſo in ſimple Notions.

The particular Idols *of the Tribe*, viz. (1.) *From imaginary Relations.*

APHORISM XLVI.

9. When the Mind is once pleaſed with certain Things, it draws all others to conſent, and go along with them: and tho' the Power and Number of Inſtances, that make for the contrary, are greater; yet it either attends not to them, or deſpiſes them; or elſe removes and rejects them, by a Diſtinction; with a ſtrong and pernicious Prejudice, to maintain the Authority of its firſt Choice unviolated. And hence, in moſt Caſes of Superſtition; as of Aſtrology, Dreams, Omens, Judgments, *&c.* thoſe who find Pleaſure in ſuch kind of Vanities, always obſerve where the Event anſwers; but ſlight and paſs by the Inſtances where it fails; which are much the more frequent. This Miſchief diffuſes itſelf ſtill more ſubtilly in Philoſophies and the Sciences; where that which has once pleaſed infects and ſubdues all other Things, tho' much more ſubſtantial and valuable than itſelf. And tho' the Mind were free from this Delight and Vanity; yet it has the peculiar and conſtant Error of being more moved and excited by Affirmatives, than by Negatives: whereas it ſhould duly and equally yield to both. But, on the contrary, in the raiſing of true *Axioms*, negative Inſtances have the greateſt Force [s].

(2.) *From Diſtortions.*

[s] As will be more fully ſhewn hereafter. See *Part* II. *Sect.* II.

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APHORISM XLVII.

(3.) *Undue Motions of the Underſtanding.*

10. The human Intellect is moſt moved by thoſe Things that ſtrike and enter it all at once; ſo as to fill and ſwell the Imagination: but for the reſt, it feigns and ſuppoſes them, after a certain imperceptible manner, to be like thoſe few that poſſeſs the Mind: whilſt the Underſtanding is quite ſlow, and unfit to paſs ſo readily to remote and diſſimilar Inſtances, whereby *Axioms* are tried, as it were, in the Fire[t]; unleſs the Taſk be impoſed upon it by ſevere Laws, and a potent Authority.

APHORISM XLVIII.

(4.) *Reſtleſs Appetite.*

11. The human Underſtanding ſhoots itſelf out, and cannot reſt; but ſtill goes on, tho' to no purpoſe. Thus 'tis inconceivable there ſhould be any Bounds to the Univerſe; yet it conſtantly, and, as it were, neceſſarily recurs, that there muſt be ſomething farther. So, again, it cannot be conreceived how Eternity ſhould have flow'd to the preſent Time: and there is the like Subtilty as to the infinite Diviſibility of Lines, *&c.* all ariſing from the Weakneſs of human Thought. But this Impotence of the Mind proves more pernicious in the Diſcovery of *Cauſes:* for altho' the higheſt *Univerſals*, in Nature, ought to be poſitive Things; becauſe they are found, and cannot be made; yet the Underſtanding, not knowing how to ſtop, is ſtill deſirous of greater Satisfaction; and endeavouring to ſtretch farther, lights upon *final Cauſes*; which are plainly of the Nature of Man, rather than of the Nature of the Univerſe[u]. And from this Fountain Philoſophy has been ſtrangely corrupted: For it is as ſenſeleſs, and unphiloſophical, to expect Cauſes in the moſt general Caſes, as not to require them in ſuch as are ſubordinate[w].

APHORISM XLIX.

(5.) *Impure Light of the Underſtanding.*

12. The Light of the Underſtanding is not a dry or pure Light, but drench'd in the Will and Affections; and the Intellect forms the Sciences accordingly: for what Men deſire ſhould be true, they are moſt inclined to believe. The Underſtanding, therefore, rejects Things difficult, as being impatient of Enquiry; Things juſt and ſolid, becauſe they limit Hope; and the deeper Myſteries of Nature, thro' Superſtition: it rejects the Light of Experience, thro' Pride and Haughtineſs; as diſdaining the Mind ſhould be meanly and waverily employ'd: it excludes Paradoxes, for fear of the Vulgar. And thus the Affections tinge and infect the Underſtanding, numberleſs Ways; and ſometimes imperceptibly.

APHORISM

[t] See above, *Sect.* I. *Aph.* 14. and hereafter, *Part* II. *Sect.* II.
[u] For *final Cauſes* are only expected to be ſuch as ſatisfy the Mind.
[w] See the *de Augm. Scientiar.* Sect. V. See alſo hereafter, *Part* II. *Sect.* II.

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APHORISM L.

13. But much the greateſt Impediment and Deviation of the Underſtanding, proceeds from the Dullneſs, Incompetency, and Fallacies of the Senſes; whence the Things that ſtrike the Senſe, unjuſtly over-balance thoſe that do not ſtrike it immediately: So that Contemplation uſually ends with Sight; and little or no Obſervation is made of Things inviſible. And hence all the Operations of the Spirits, included in tangible Bodies, all ſubtile Organizations, and the Motions of the Parts, are unknown to Mankind: and yet, unleſs theſe are diſcover'd and brought to Light, nothing very conſiderable can be done in Nature, with regard to Works [x]. Nay, the Properties of the common Air, and numerous Bodies of greater Subtlety than that, remain almoſt unknown: For Senſe, of itſelf, is a weak and erroneous Thing. Nor can Inſtruments, for improving and ſharpening the Senſes, be here of any great Service: all true *Interpretations* of Nature being made by proper and appoſite *Inſtances* and *Experiments*; wherein Senſe judges of the Experiment only; and the Experiment judges of Nature, and the Fact [y]. (6.) *Defects in the Senſes.*

APHORISM LI.

14. The Underſtanding is, by reaſon of its own Nature, carried on to Abſtraction; and fancies thoſe Things to be conſtant, which are wavering: but it is better to diſſect Nature, than to abſtract her [z]; as was practiſed by the School of *Democritus*; which went farther into Nature, than any of the reſt. And as Matter is principally to be conſider'd in all its Schemes and Organizations; ſo likewiſe are pure Action, and the *Laws of Action*, or *Motion:* but for the *Ariſtotelian Forms*, they are Idols, or Figments of the Mind; unleſs we call the *Laws of Motion*, *Forms* [a]. (7.) *And Fondneſs for Abſtractions.*

APHORISM LII.

15. And this kind of *Idols* are what we term *Idols of the Tribe:* which have their Origin, either from (1.) the Uniformity of the human Spi-

[x] See the *Sylva Sylvarum*, under the Articles *Imagination*, *Nature*, *Spirits*, and *Sympathy*. Mere groſs Matter is a dull unactive Thing; they are Motions, and ſubtile Matters in Motion, that perform the chief Operations of Nature.

[y] See above, *Aph.* 24, and hereafter, *Aph.* 70. See alſo *Vol.* I. *p.* 12. where this Matter is farther explained; but the full Illuſtration and Proſecution of it comes in the Second Part of the preſent Work.

[z] That is, by making of Experiments, rather than by Contemplation, and Reaſoning upon Notions, without the proper Facts.

[a] This is meant of *abſtract Forms*; but for *phyſical Forms*, or the eſſential, and efficient Cauſe of the peculiar Properties of Things, it is the principal Deſign of the Second Part of the preſent Work, to ſhew how they may be diſcover'd. See *Aph.* 17. of that Part. See alſo *de Augment. Scientiar.* Sect. V.

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rit [b]; (2.) its Prepoſſeſſion [c]; (3.) its Narrowneſs [d]; (4.) its reſtleſs Motion [e]; (5.) The Tincture of the Affections [f]; (6.) the Incompetency of the Senſes [g]; or (7.) the Manner of the Impreſſion [h].

APHORISM LIII.

The particular Idols of the Den.

16. *Idols of the Den* take their Riſe from the peculiar Nature of every particular Perſon; both with regard to Soul and Body: as alſo from Education, Cuſtom, and Accidents. This kind is various and manifold; but we will touch upon ſuch as require the greateſt Caution, and have the greateſt Force to pollute the Underſtanding.

APHORISM LIV.

(1.) From Affection to particular Studies.

17. Men are fond of particular Sciences and Studies; either becauſe they believe themſelves the Authors and Inventors thereof; or becauſe they have beſtow'd much Pains upon them; and principally applied themſelves thereto. And ſuch Men as theſe, if they afterwards take to Philoſophy and univerſal Contemplations, generally wreſt and corrupt them with their former Conceits: of which we have a ſignal Example in *Ariſtotle*; who made his Natural Philoſophy ſuch an abſolute Slave to his Logic, as render'd it contentious, and, in a manner, uſeleſs. The Tribe of Chemiſts, from a few Experiments of the Furnace, have run up a phantaſtical Philoſophy, of very ſmall Extent. And ſo Dr. *Gilbert*, after he had, with immenſe Labour, proſecuted his magnetical Studies, preſently invented a Philoſophy agreeable to his own Notion [i].

APHORISM LV.

(2.) The principal Difference of Capacities.

18. The great and radical Difference of Capacities, as to Philoſophy and the Sciences, lies here; that ſome are ſtronger and fitter to obſerve the Differences of Things; and others to obſerve their Correſpondencies. For a ſteady and ſharp Genius, can fix its Contemplations; and dwell, and faſten upon all the Subtilty of Differences: whilſt a ſublime and ready Genius perceives, and compares, the ſmalleſt and moſt general Agreements of Things. But both Kinds eaſily fall into Exceſs; by graſping either at the dividing Scale, or Shadows of Things.

APHORISM

[b] See above, *Aph.* 45.
[c] See *Aph.* 46.
[d] See *Aph.* 47.
[e] See *Aph.* 48.
[f] See *Aph.* 49.
[g] See *Aph.* 50.
[h] See *Aph.* 51.
[i] Thus we ſee of later Date, when Mathematicians apply to Phyſicks, Medicine, Chemiſtry, *&c.* they render them all mathematical; when Chemiſts apply to Phyſicks, Medicine, *&c.* they render them chemical: ſo when Divines apply to Philoſophy, they often render it ſcriptural, *&c.* See below, *Aph.* 65.

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APHORISM LVI.

19. Some Men of Genius are wrapp'd up in the Admiration of Antiquity; others ſpend themſelves in a Fondneſs for Novelty; and few are ſo temper'd as to hold a Mean: but either quarrel with what was juſtly laid down by the Ancients; or deſpiſe what is juſtly advanced by the Moderns. And this is highly prejudicial to Philoſophy and the Sciences; as being rather an Affectation of *Antiquity*, or *Novelty*, than any true Judgment: for Truth is not to be derived from any Felicity of Times, which is an uncertain Thing; but from the Light of Nature and Experience, which is eternal. Theſe Affectations, therefore, are to be laid aſide; and Care taken, that the Underſtanding be not hurried by them, into Conſent [k]. (3.) *Affectation of Antiquity, or Novelty.*

APHORISM LVII.

20. To contemplate Nature and Bodies, in their Simplicity, breaks and grinds the Underſtanding; and, to conſider them in their Compoſitions and Configurations, blunts and relaxes it: as appears plainly, upon comparing the School of *Leucippus* and *Democritus* with the other Philoſophies. For the former is ſo taken up with the Particles of Things, as almoſt to neglect their Structure; whilſt the others view the Fabrication of Things with ſuch Aſtoniſhment, as not to enter into the Simplicity of Nature. Both theſe Contemplations, therefore, are to be taken up by Turns; that the Underſtanding may at once be render'd more piercing and capacious; and the Inconveniences above-mention'd, with the *Idols* thence ariſing, be prevented [l]. (4.) *And ill Choice of Objects.*

APHORISM LVIII.

21. And, in this manner, let *contemplative Prudence* proceed, in chaſing and diſlodging the *Idols of the Den*; which principally have their Riſe, (1.) from Prevalency; (2.) the Exceſs of Compoſition, and Diviſion; (3.) Affectations for Times; or (4.) from too great, and too ſmall a Size of Objects [m]. And, in general, whoever ſtudies the Nature of Things, ſhould hold for ſuſpect, whatever powerfully ſtrikes and detains the Mind; and uſe ſo much the greater Caution to preſerve his Underſtanding pure and equable, in ſuch kind of Tenets. *The Riſe of the Idols of the Den.*

APHORISM

[k] How much regard has been had to this Aphoriſm, in the late Conteſts for and againſt the Superiority of ancient and modern Learning?

[l] How the Author practiſed this Rule himſelf, appears from his *Sylva Sylvarum*, Hiſtories of *Winds*, *Life* and *Death*, &c.

[m] See *Aph.* 54, 55, 56, 57.

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APHORISM LIX.

Idols of the Market, from Words.

22. But none are ſo troubleſome as the *Idols of the Market*; which inſinuate themſelves into the Mind, from the Aſſociation of Words and Terms. For tho' Men believe that their Reaſon governs Words; it alſo happens, that Words retort, and reflect their Force upon the Underſtanding: whence Philoſophy and the Sciences have been render'd ſophiſtical, and unactive. Words are generally impoſed according to vulgar Conceptions; and divide Things by Lines[n] that are moſt apparent to the Underſtanding of the Multitude: And when a more acute Underſtanding, or a more careful Obſervation, would remove theſe Lines, to place them according to Nature; Words cry out, and forbid it. And hence it happens, that great and ſerious Diſputes of learned Men, frequently terminate in Controverſies about Words and Terms: which it were better to begin with, according to the prudent Method of the Mathematicians, and reduce them to Order by Definitions. But in natural and material Things, even theſe Definitions cannot remedy the Evil; becauſe Definitions themſelves conſiſt of Words; and Words generate Words: ſo that, of neceſſity, recourſe muſt be had to particular *Inſtances*, their Series, and Orders; as we ſhall ſhew, when we come to the Manner of raiſing *Notions*, and *Axioms*[o].

APHORISM LX.

Are of two kinds; viz. Names of Things not exiſting.

23. The *Idols* which Words impoſe upon the Underſtanding, are of two Kinds; as being either the Names of Things that have no Exiſtence; or the Names of Things that do exiſt; but Names confuſed, ill defined, and raſhly and irregularly abſtracted from Things. Of the former Kind are ſuch as *Fortune*, the *Primum Mobile*, the *Orbs* of the *Planets*, the *Element* of *Fire*, and the like Figments; which ariſe from imaginary and falſe Theories. For as there are Things that, thro' want of being obſerved, remain without Names; ſo there are Names coined upon phantaſtical Conceits, and have no Things correſponding to them. *Idols* of this Kind are diſlodged by a conſtant rejection and repeal of Theories, and phantaſtical Notions[p].

And Words wrong form'd from Things.

24. But the other Kind, raiſed by a wrong and unſkilful Abſtraction, is intricate and deep rooted. For Example: let us chooſe any Word, as the word *Moiſture*, for inſtance, to try how far the Things agree which are ſignified by it; and we ſhall find it no other than a confuſed Mark of

[n] Differences, or Diſtinctions.

[o] See *Part* II. *Sect.* I. See alſo the *de Augment. Scient.* Sect. XV. and XVII.

[p] See Mr. *Locke's Eſſay upon Human Underſtanding*, Chap. of *Words*, See alſo hereafter, *Aph.* 64, *&c.*

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of different Actions, that are inconſtant and irreducible to one another. For *Moiſture* ſignifies, (1.) that which can eaſily diffuſe itſelf round another Body; (2.) that which is indeterminable of itſelf, and cannot fix; (3.) that which yields eaſily every way; (4.) that which readily divides, and ſcatters itſelf; (5.) that which eaſily unites with itſelf, and collects together; (6.) that which eaſily flows, and is eaſily put in Motion; (7.) that which readily ſticks to another Body, and wets it; (8.) that which is eaſily melted, or reduced from a Solid to a Liquid. And therefore, when this Term comes to be publiſhed and impoſed; with an Exception of ſome of the Significations, *Flame* will be moiſt; with the Exception of others, *Air* is not moiſt; and, again, with ſome other Exceptions, fine *Powders* and *Glaſs* are moiſt. Whence it eaſily appears that this Notion is inconſiderately taken from Water only, and ſome other common and obvious Liquors; and not duly verified [q].

25 There are alſo certain Degrees of Error and Depravity in Words. The leaſt faulty Kind, is that of the Names of Subſtances; eſpecially the lower Species, which are well deduced; for the Notions of *Chalk* and *Clay* are juſt: but the Notion of *Earth* inadequate. The Tribe of Actions is more faulty; ſuch as *Generation*, *Corruption*, and *Alteration*: but the Notions of Qualities, except the immediate Objects of Senſe, are the moſt depraved; as, *Gravity*, *Levity*, *Tenuity*, *Denſity*, &c. Yet ſome of theſe Notions muſt, of neceſſity, be juſter than others, in all the Kinds; according to the Number of Inſtances that have fallen under the Senſes [r]. *Depravities in Words.*

APHORISM LXI.

26. But for the *Idols of the Theatre*, they are neither innate, nor ſecretly inſinuated into the Underſtanding; but plainly palm'd upon it; and received from fabulous Theories, and the perverted Laws of Demonſtration. To undertake a Confutation of theſe, is by no means congruous with what we have already advanced [s]: for where neither Principles nor Demonſtrations are agreed upon, there can be no arguing. And this happens fortunately, to leave the Ancients poſſeſs'd of their Glory: we can detract nothing from them; whilſt the Queſtion is only concerning the Way [t]. And a Cripple in the right Way may beat a Racer in the wrong one. Nay, the fleeter and better the Racer is, who has once miſs'd *Idols of the Theatre palm'd upon the Mind.*

[q] A Language formed and verified after the manner here indicated, is greatly wanting in Philoſophy; and perhaps cannot be compleated, till Philoſophy itſelf is perfected.

[r] Whence it is plain, that a juſt Language cannot be formed without a competent Knowledge of Philoſophy.

[s] See above, *Aph.* 35.

[t] The Author is extremely apprehenſive of being ſuſpected to rival the Ancients; which Apprehenſion, if he had not well guarded againſt it, might have prejudiced his whole Deſign: as indeed it in ſome meaſure did; and ſtill continues to do with many.

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miſs'd his Way; the farther he leaves it behind. Our Method, however, of diſcovering the *Sciences*, does not much depend upon Subtilty, and Strength of Genius; but lies level to almoſt every Capacity, and Underſtanding. For, as it requires great Steadineſs and Exerciſe of the Hand to draw a true ſtrait Line, or a Circle, by the Hand alone; but little or no Practice, with the Aſſiſtance of a Ruler, or Compaſſes: ſo it is with our Method. And altho' there be here no uſe of particular Confutations; yet ſome Notice muſt be taken (1.) of the Sects and Sorts of theſe *Theories*; (2.) the falſe Colours thereof; (3.) the Cauſes of ſo great an Infelicity; and (4.) the Cauſes of ſo laſting and general a Conſent in Error; and all this, that the Paſſage to Truth may be made the eaſier; and the Underſtanding the more diſpoſed to cleanſe itſelf, and put away its *Idols* [u].

[u] Dr. *Hooke* has familiarized and illuſtrated ſome Part of this Doctrine of *Idols*, in his *General Scheme, or Idea, of the preſent State of Natural Philoſophy.* See *Hooke's* Poſthumous Works, *p.* 7---11.

SECT. III.

Of the different Philoſophical THEORIES.

APHORISM LXII.

Theories, whence, and how ſuppreſs'd.

1. THE *Idols of the Theatre*, or *Theories*, are many; and will probably grow much more numerous [w]: for if Men had not, thro' many Ages, been prepoſſeſſed with Religion and Theology; and if civil Governments, but particularly Monarchies, had not been averſe to Innovations of this kind, tho' but intended; ſo as to make it dangerous and prejudicial to the private Fortunes of ſuch as take the Bent of Innovating [x]; not only by depriving them of Advantages, but alſo by expoſing them to Contempt and Hatred; there would, doubtleſs, have been numerous other Sects of Philoſophies and Theories introduced; of kin

[w] The Number of them has been great; even ſince this Piece was wrote.
[x] See the Author's *Eſſay upon Innovation*, Supplem. XI. *Sect.* III. *ad fin.*

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kin, to those that, in great Variety, formerly flourished among the *Greeks*. And these theatrical Fables have this in common with dramatical Pieces; that the fictitious Narrative is neater, more elegant and pleasing, than the true History [y].

2. In general, Philosophy receives much Matter from a few Particulars; or else but little from many: so that, in both Cases, it is founded on too narrow a Basis of Experience, and Natural History; and pronounces from too little Knowledge [z]. *The Origin of Errors.*

3. (1.) The rational Tribe of Philosophers hastily take up vulgar Things from Experience, without finding them to be certain; or carefully examining and weighing them: and commit all the rest of the Work to Thought, and the Discussion of the Wit [a].

4. (2.) Another Kind of Philosophers labour, with great Diligence and Accuracy, in a few Experiments; and thence venture to deduce and build up Philosophies: and strangely wrest every thing else to these Experiments [b].

5. (3.) Lastly, there is a Kind of such as mix Theology, and Traditions of Faith and Worship, with their Philosophy; and the Vanity of some among them has turn'd aside, to derive the Sciences from Spirits and Angels [c]: so that the Origin of Errors, and false Philosophy, is of three Kinds; *viz.* (1.) *Sophistical*; (2.) *Empirical*; and (3.) *Superstitious* [d].

APHORISM LXIII.

6. We have an eminent Example of the *first* Kind in *Aristotle*; who corrupted *Natural Philosopy* with his *Logic*; in forming the World of *Categories*, or Predicaments; passing over the Business of Rarifaction and Condensation, with the jejune Distinction of *Act* and *Power*; asserting but one proper Motion to all Bodies; and imposing numerous other Fictions, at his own Pleasure, upon the Nature of Things: being all along more sollicitous how Men might defend themselves by Answers, and advance something that should be positive in Words; than to come at the inward Truth of Nature [e]. This will appear to the full, by comparing the Philosophy of *Aristotle* with the other Philosophies, that were *Among the rational Philosophers*; viz. Aristotle.

[y] Thus the *Cartesian* Philosophy is more agreeable to read, than the *Newtonian*.
[z] Commonly in the way of the vulgar Induction above-mention'd, *Aph.* 17.
[a] See more of this below, *Aph.* 63.
[b] See below, *Aph.* 64.
[c] Thus, in particular, Chemistry and Natural Magick, have been thought derived from Angels and Spirits.
[d] See below, *Aph.* 65.
[e] As our Education in *Europe* is chiefly *Aristotelian*; we should have a strict Watch upon ourselves in all Philosophical Enquiries, Writings, and Discourses; that we are not led away with *Aristotelian* Notions. It should seem as if all our common Reasoning was infected with *Aristotelian* Prejudices; so as to be affectedly logical and captious, rather than just and philosophical; or formed upon the true Nature of Things. See hereafter, *Aph.* 77.

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celebrated among the *Greeks*. For the *Homoiomera* of *Anaxagoras*, the *Atoms* of *Leucippus* and *Democritus*, the *Heaven* and *Earth* of *Parmenides*, the *Enmity* and *Amity* of *Empedocles*, the Resolution of Bodies into the neutral Nature of Fire, with their Return to Density, according to *Heraclitus*; all savour somewhat of Natural Philosophy, and Experience: whereas both the *Physics*, and *Metaphysics*, of *Aristotle*, speak little more than *logical Terms*. 'Tis true, his *Books of Animals*, *Problems*, and other Pieces, make frequent Use of Experiments; but then he had first pronounced without their Assistance; and did not duly consult Experience in forming his *Decrees* and *Axioms*: but after he had passed Judgment according to his own Humour; he winds Experience round, and leads her captive to his Opinions. And, upon this Account, he is more culpable than his modern Followers, the scholastic Philosophers, who meddled not with Experience at all [f].

APHORISM LXIV.

The Empirical Philosophy.

7. But the *Empirical Philosophy* produces Opinions more deform'd and monstrous, than either the *sophistical* or the *rational*; as not being founded in the Light of vulgar Notions; (which, tho' slender and superficial, is yet in some sort universal) but rests in the narrow Confines and Obscurity of a few Experiments. Whence such a Philosophy appears probable, and in a manner certain, to the Men who daily converse with these Experiments; and thereby deprave their Imagination [g]: whilst to all others it seems incredible and vain. We have a notable Example hereof in the *Chemists*, and their Doctrines; tho' the like, at this Time, perhaps, is not to be found, unless in *Gilbert*'s Philosophy. Yet the Caution, with regard to these Philosophies, should by no means be pass'd over; because we foresee, and venture to foretel, that if Mankind, being admonish'd by us, shall at length, in earnest, betake themselves to *Experience*; and lay aside *sophistical Doctrines*; even then, thro' an over eager, and precipitant Hurry of the Understanding; and the Desire it has of bounding or flying to Generals, and first Principles; there will be great Danger from these narrow Philosophies [h]: which is an Evil we ought to remedy [i].

APHORISM

[f] For a farther Account of *Aristotle*, see *p.* 52. of this *Volume*.

[g] That is, give it a Bent some one particular way; as we see in those who have long applied themselves to a certain Trade; the Discovery of the Longitude; the making of Gold; the writing a certain Book; or the prosecuting any one Set of Experiments: for thus, without a prudent Change and Intermixture of Studies, and Employments, the Mind will be warped; and strangely draw foreign Things to some Consent with those under Consideration; or else neglect and overlook whatever does not immediately regard the present View.

[h] Thus, tho' there is always some one reigning or general Philosophy; yet almost every Enquirer into Nature has a particular lesser System, form'd upon his own Experience. This appears remarkably in the Members of the *Royal Academy of Sciences at* Paris, *&c.*

[i] Regard is had thereto through the whole Course of the Work.

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APHORISM LXV.

8. But the *Corruption of Philoſophy*, from the Admixture of *Superſtition* and *Theology*, is much more extenſive and pernicious; either to whole Bodies of Philoſophy, or their Parts: For the Underſtanding is as ſubject to the Impreſſions of Fancy; as to the Impreſſions of vulgar Notions. The diſputatious, or ſophiſtical Philoſophies, may indeed entrap the Underſtanding; but the ſuperſtitious, tumid, and, as it were, poetical Kind, flatters and courts it more: for Men have a certain Pride of the Underſtanding, as well as of the Will; eſpecially Men of an elevated Genius [i]. *And the Superſtitious.*

9. We meet with an Example of this Kind among the *Greeks*, and principally in *Pythagoras*; tho' join'd with a groſs and burthenſome Superſtition [k]: but a more dangerous and ſubtile one in *Plato*, and his School [l]. The ſame kind of Miſchief likewiſe happens in the Parts of the other Philoſophies; as, by introducing *abſtract Forms*, *final Cauſes*, and *firſt Cauſes*; commonly omitting thoſe that are intermediate. And in this Caſe the utmoſt Caution ſhould be uſed; for nothing is more pernicious than to canonize Errors: and to venerate Vanities, ſhould be accounted the Peſt of the Underſtanding. Yet ſome of the Moderns have ſo far indulged this ſtrange Levity, as to endeavour the founding of *Natural Philoſophy* upon the firſt Chapter of *Geneſis* [m], the Book of *Job*, and other Parts of Sacred Writ; thus *ſeeking the Dead among the Living*. And this Vanity is ſo much the rather to be reſtrain'd and ſuppreſs'd; as from the wild Mixture of divine Things with human, ariſe not only *phantaſtical Philoſophies*, but *heretical Religions* [n]. 'Tis, therefore, of great Importance, with a ſober Mind, to *give to Faith* no more than *the Things that are Faith's*. And thus much for the bad Authorities of Philoſophies; which are founded (1.) in vulgar Notions; (2.) Scantineſs of Experiments; and (3.) in Superſtition [o]. *Exemplified in* Pythagoras *and* Plato.

APHORISM LXVI.

10. We proceed next to the *corrupt Matter of Contemplation* [p], eſpecially in Natural Philoſophy. The Underſtanding is perverted by the Sight of Things performed in the mechanic Arts, which generally alter *The corrupt Matter of Contemplation.*

[i] See below, *Aph.* 71.
[k] See hereafter, *Aph.* 105.
[l] See below, *Aph.* 75, 76, 77, 96, 105.
[m] See Dr. *Keil*'s Philoſophical Examination of certain *Theories* of the Earth.
[n] This Caution appears to have been too little obſerved by the modern Philoſophers.
[o] As is ſhewn in the preceding *Aphoriſms*; 63, 64, 65.
[p] *Viz.* Where erroneous Notions are formed of Things; and applied, by the mental Powers, in the building up of Philoſophy.

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(1.) *From Errors in the mechanic Arts and Nature.*

the Bodies by *Compoſition*, or *Separation*[q]: whence Men are apt to imagine, that ſomething of the like Kind happens in all natural Bodies: and from this Notion, the Figment of the *Elements*, and their uniting to compoſe all natural Bodies, had its Riſe. Again, when Men contemplate Nature in her Freedom, they meet with different Species, or Appearances, of Things; as, Animals, Vegetables, Minerals; and hence readily imagine there are in Nature certain *primary* Forms, or Differences, which ſhe endeavours to diſcloſe or educe; whilſt the other Varieties proceed from ſome Impediments and Deviations of Nature in her Work; or from the Struggle of different Species, or Bodies, together; and the Tranſplantation of one into another[r]. The former Imagination produced the Notion of *primary*, or *elementary Qualities*; and the latter that of *occult Qualities*, or *ſpecific Virtues*: both which are owing to the empty abridging of Contemplations; wherein the Mind reſting, is kept from more ſolid Knowledge. But Phyſicians operate better by Means of the *ſecondary Qualities*, and Virtues of Things; ſuch as thoſe of attracting, repelling, attenuating, diſcuſſing, ripening, *&c.* and might have advanced much farther, but for that fruitleſs Abridgment by the above-mention'd *elementary Qualities*, and *ſpecific Virtues*; wherewith they corrupt the others, which are juſtly obſerved; either by reducing them to *primary Qualities*, and their ſubtile and incommenſurable Mixtures; or by not carrying them on, with continued Diligence and Obſervation, to *third* and *fourth Qualities*; but unſeaſonably breaking off the Conſideration. Nor are theſe, and the like Qualities, to be enquired after only in Medicines for the human Body; but alſo in the Changes of all other natural Bodies[s].

(2.) *From logical Notions in Phyſics.*

11. But it is much more prejudicial, that the *quieſcent Principles*, whereof Things conſiſt, ſhould be ſtudied and enquired into; and not the *moving Principles*, whereby they act: the former relating to Diſcourſe; but the latter to Works. For thoſe vulgar Differences of Motion in the common Natural Philoſophy; ſuch as *Generation*, *Corruption*, *Augmentation*, *Diminution*, *Alteration*, *Removal*, &c. are of little Significancy; as meaning no more, than that if a Body, otherwiſe unmoved, be put out of its Place, this is *Removal*; but if the Place and Appearance remain the ſame, and the Body be changed in Quality, this is *Alteration*; and if, from ſuch a Change, the Bulk and Quantity of the Body do not remain the ſame, this is a Motion of *Augmentation*, or *Diminution*; but if Bodies are ſo far altered as to change both Appearance and Subſtance, and turn into others, this is *Generation*, and *Corruption*. But theſe are mere popular Notions, that no way enter into Nature; being only the Meaſures and

[q] And hence *Mechanics* and *Chemiſts* are frequently deceived; when they ſuppoſe that Nature ſeparates and joins Bodies, after the manner that Men join and ſeparate them.

[r] As when Monſters are produced.

[s] If Light be required in this Subject, Mr. *Boyle's Enquiry into the Origin of Forms and Qualities*, may be advantagiouſly conſulted. See, in particular, the *Abridgment of his Works*, Vol. I. p. 271, 272. See alſo the Author's *Sylva Sylvarum*; paſſim.

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and Periods, and not the *Species of Motion*[t]; and pointing out only *how far*, and not *by what Means* Things have proceeded. Nor do they intimate the *Appetites of Bodies*[u], or the Operations of their Parts; but only when the Motion exhibits a Thing to the Sense, in a gross manner, different from what it was; Men there begin their Distinction. Nay, when they would intimate any thing, as to the Causes of Motions, and raise a Division from them, they idly introduce a jejune Distinction betwixt natural and violent Motion; this itself being but a mere vulgar Conceit: for all violent Motion is truly natural; the external Efficient only setting Nature otherwise at work, than she was before[w].

12. On the other hand; if any one should observe that Bodies have an Appetite to touch each other, so as to prevent a Vacuity, or Separation in the Union of Nature; or that Bodies have an Appetite of contracting themselves within their own natural Dimensions, out of which, when they are either stretched or squeezed, they immediately endeavour to restore themselves, and recover their former State; or that Bodies have an Appetite of coming together to the Masses of Matter similar to them; that is, the Mass of dense Bodies towards the Globe of the Earth: These, and all such, are true physical Kinds of Motion. But the former are merely logical, and scholastic; as will manifestly appear, by comparing the two together. *How physical Notions differ from metaphysical.*

13. Nor is it a less Misfortune, that Men, in their Philosophies and Contemplations, bestow their Time in discovering and treating *the ultimate Principles*, or *last Resorts of Nature*: whereas all Utility, and Power of Acting, lies in the Mid-way[x]. But, generally, Men cease not to abstract Nature, till they arrive at potential and uninform'd Matter; or till they have divided her so far, that they come to Atoms: which Things, tho' ever so real, make but little to the Advantage of Mankind[y]. (3.) *Not keeping a Mean in Nature.*

APHORISM LXVII.

14. The Understanding also is to be guarded against the *Excesses* of Philosophies, as to the yielding or witholding of Assent; because such kinds of Excesses seem to fix, and, in a manner, perpetuate, *Idols*; as not allowing any Opportunity for their Removal. *And* (4.) *from Excesses in Point of Assent.*

15. These *Excesses* are of two Kinds: the one belonging to such as pronounce hastily; and make the Sciences positive and magisterial: the other to those who have introduced Scepticism, and a vague indeterminate *These Excesses of two Kinds.*

[t] For the Species of Motion, see hereafter, *Part* II. *Aph.* 48.

[u] *Viz.* The Dispositions that Bodies have to be affected and altered by each other, upon Contact, Mixture, &c. as the Loadstone attracts Iron, Gold attracts Quicksilver, &c.

[w] This is farther illustrated in the Second Part of the present Work; and in the *Sylva Sylvarum*. See the Articles *Nature*, *Motion*, *Spirits*, &c.

[x] This is already explain'd under *Aph.* 48, 51, 57.

[y] See above, *Aph.* 19, 20, 21, 22.

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nate Method of Enquiry. The former of these depresses, and the latter enervates the Understanding. The Philosophy of *Aristotle*, (when, after the *Turkish* Manner, it had slain its Brother-Rivals to the Throne,) pronounced upon every thing; suborning Questions at Pleasure, and dispatching them again, to shew that all was now certain and decided. And this Method has also prevailed, and is in use, among the *Aristotelian* Successors of Philosophy [z].

Instanced in Aristotle.

Plato.

16. But the School of *Plato* introduced Scepticism; at first in the way of Jest and Irony, to oppose the ancient Sophists, *Protagoras*, *Hippias* [a], and the rest; who feared nothing so much as the appearing to doubt of any thing [b]. But the new *Academy* dogmatized upon Scepticism, and profess'd it. And tho' this was a fairer Procedure than by pronouncing licentiously; (for they declared they meant not to confound Enquiry, as *Pyrrho* and his Followers did; but held what they pursued as probable, tho' not what they professed as true;) yet, when once the Mind despairs of finding Truth, all Things languish: whence Men rather turn aside to Philology, agreeable Conversation, Discourse, and Roving; than confine themselves to the Severity of Enquiry. But the Point we constantly have before us, is not to lessen the Authority of the Sense and Intellect, and expose their Imperfections; but to afford them all the Helps we can.

Pyrrho.

APHORISM LXVIII.

All Idols to be renounced.

17. And thus much for the several Sorts of *Idols*; which are all of them to be solemnly and for ever renounced; that the Understanding may be thoroughly purged and cleared: for the Kingdom of Man, which is founded in the *Sciences*, can scarce be enter'd otherwise than the *Kingdom of God*; that is, *in the Condition of little Children* [c].

APHORISM LXIX.

False Demonstrations countenance the Idols of the Mind.

18. *Corrupt Demonstrations* serve as the Guards and Defenders of the *Idols* of the Mind; logical Demonstrations being generally such as subject and enslave the World to the Thoughts of Men; and Thoughts to Words [d]: whereas *genuine Demonstrations* are, potentially, Sciences and Philosophies themselves [e]. For such as are the Demonstrations, or, according as they were conducted, well or ill; such are the Doctrines and Specula-

[z] See hereafter, *Aph.* 71, 72.

[a] See below, *Aph.* 71.

[b] See *Vol.* I. *p.* 31. and *p.* 118.

[c] *Viz.* By discharging all the false, complex Ideas, and unjust Notions, enforced or imbibed thro' Education, Custom, Prejudice, particular Studies, or any of the Causes above-mentioned.

[d] It must here be remember'd, what was said above, that Syllogisms consist of Propositions, Propositions of Words, *&c.* See *Aph.* 11, 12, 13. and again, 24. 47.

[e] See *Aph.* 22. Demonstrations are potentially Sciences and Philosophies; because, as the Demonstrations are just or false; so will the Doctrines that follow from them be true or erroneous.

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Speculations that follow upon them. Thoſe Demonſtrations, we at preſent uſe, in the whole Proceſs that leads from Senſe and Things, to *Axioms* and *Concluſions*, are fallacious and inſufficient [f]. This Proceſs is of four Kinds; and ſo are its Errors. (1.) The Impreſſions of the Senſe itſelf are vicious: for the Senſe both fails and deceives. But its Failures are remedied by *Subſtitution*; and its Fallacies by *Rectification* [g]. (2.) *Notions* are ill form'd from the Impreſſions of the Senſes; and prove indeterminate and confuſed; but ought to be clear and well limited [h]. (3.) *Induction* is faulty; as inferring the Principles of the Sciences by ſimple Enumeration; without duly excluding, reſolving, and ſeparating Things or Natures [i]. (4.) Laſtly, that Method of Invention and Proof, which firſt raiſes the moſt general Principles, then applies the intermediate Axioms thereto, and tries them; is the Mother of Errors, and the Deſtruction of all the Sciences [k].

APHORISM LXX.

19. But *Experience* is by far the beſt *Demonſtration*; provided it dwell in the Experiment: for the transferring of it to other Things judged alike, is very fallacious; unleſs done with great Exactneſs and Regularity. But the preſent Method of Experimenting is blind and ſtupid [l]: and therefore, whilſt Men wander, and hold no certain Courſe, but take Advice only as Things occur; they are hurried round to abundance of Particulars, without advancing forward. And ſometimes they are pleaſed, ſometimes diſconcerted; but always find Matter of farther Enquiry [m]. It commonly happens that Men make Experiments ſlightly, and as in the way of Diverſion; ſomewhat varying thoſe already known: and if they ſucceed not to their Expectation, they grow ſick of the Attempt, and forſake it. Or, if they apply in earneſt to Experiments, they commonly beſtow all their Labour upon ſome one Thing; as *Gilbert* upon the *Loadſtone*, and the *Alchemiſts* upon *Gold*. But this Procedure is as unſkilful as it is fruitleſs: For no Man can advantagiouſly diſcover the Nature of any Thing in that Thing itſelf; but the Enquiry muſt be extended to Matters that are more common [n].

The beſt Demonſtrations are from Experience.

20. Again,

[f] See above, *Aph.* 26, 27, 28, 29.

[g] *Viz.* By means of ſuitable Inſtruments and Experiments. See *Aph.* 16, 18, 50. But for aſſiſting, rectifying, and verifying the *Senſes*, ſee hereafter, *Part* II. *Aph.* 38, 39, 40, *&c.*

[h] See *Aph.* 15, 18, 19, 20, and 40.

[i] See *Aph* 14, 18, 19, 20, 21, 22.

[k] See above, *Aph.* 19, *&c.*

[l] Not led by any Light of Knowledge, or Axioms; but proceeding by Conjecture, and at Random.

[m] The Remedy for all this is propoſed in the Second Part of the Work.

[n] Thus, in the Enquiry after the Means of prolonging Life in Man, the Author firſt enquires into the Ways of rendring ſimpler Bodies durable; and endeavours to find out the Requiſites for that Purpoſe; then transfers, ſo much as is ſuitable of the Diſcovery, to the human Body.

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The Error of leaving Experiments too ſoon.

20. Again, if Men do proſecute any Science or Doctrine, in the way of Experiment; yet they generally go off to Practice haſtily and unprepared: and this not ſo much for the Uſe and Benefit of the Practice itſelf, as to receive a kind of Security in ſome new Work, that they ſhall not fruitleſly employ themſelves in others; as alſo, that, from a Manifeſtation of their Succeſs, they may procure a better Opinion of themſelves, as to what they have in hand. And thus, like *Atalanta*, ſtooping to take up the golden Fruit, they interrupt the Courſe, and loſe the Victory. But, in the true Courſe of Experience, and applying it to new Works, we ſhould follow the Example of the divine Wiſdom, and Order. For as God, in the firſt Day of Creation, made nothing but Light; allowing one whole Day to that Work; without creating any material Thing therein: ſo *Cauſes* and true *Axioms* are firſt to be drawn out from all Kinds of Experience; and the *Experiments of Light*, and not of *Profit*, to be inveſtigated. For *Axioms*, duly diſcover'd and eſtabliſh'd, will afford plentiful Harveſt of Practice; and draw after them whole Sheaves of Works [o].

The common Experience, a falſe Demonſtration.

21. At preſent, we have only ſpoke of *vulgar Experience*, as a *falſe Demonſtration*; but ſhall hereafter conſider thoſe Ways of Experimenting, which are no leſs block'd up and beſet than the Ways of Judging [p]. But firſt, we muſt treat of the Signs that manifeſt the preſent Philoſophy, and the Sciences, to be faulty; as alſo the Cauſes of ſo ſtrange a Thing: For theſe are two very uſeful Means of gently and calmly extirpating the *Idols* of the *Mind*; as a Knowledge of the Signs prepares the Aſſent; and the Explanation of the Cauſes takes away the Miracle.

[o] It is extremely difficult to convince the Mind of this; at leaſt, ſo far as to make Men act upon it. For Philoſophers do not ſeem greatly employ'd in diſcovering theſe *Cauſes*, and raiſing theſe *Axioms*, upon which a ſerviceable Philoſophy is to be founded.

[p] See *Sect.* V. *Aph.* 10, 11, 87, 88, *&c.*

SECT.

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SECT. IV.

Of the Signs, *or* Characteriſticks, *of falſe* PHILOSOPHIES.

APHORISM LXXI.

1. THE *Sciences* we poſſeſs are almoſt wholly derived from the *Greeks*: For what the *Roman*, *Arabian*, and more modern Authors have added, is not much, or of any great Weight; and alſo built upon the Diſcoveries made by the *Greeks*. But the Knowledge of the *Greeks* was of the profeſſorial and diſputatious Kind; which is abſolutely unfit for ſearching after Truth. And hence the Name of *Sophiſt* was, by thoſe who deſired to paſs for Philoſophers, contemptuouſly thrown upon the old Rhetoricians; as *Gorgias*, *Protagoras*, *Hippias*, *Polus*, and almoſt the whole Number; as *Plato*, *Ariſtotle*, *Zeno*, *Epicurus*, *Theophraſtus*, and their Succeſſors *Cryſippus*, *Carneades*, &c. There was only this Difference betwixt them, that the former were a wandring, mercenary Tribe, who went from City to City, making a Shew of their Wiſdom, and aſking a Reward: whilſt the other were more grave and generous; who having fix'd Habitations, open'd their Schools, and taught without Fee. Yet both Kinds were profeſſorial; they both reduced every thing to Diſpute; and inſtituted and defended certain Sects and Hereſies of Philoſophy: ſo that their Doctrines, as *Dionyſius* ſharply ſaid of *Plato*, were only the *Talk of idle old Men, to raw young Fellows*. But the more ancient among the *Greeks*, as *Empedocles*, *Anaxagoras*, *Leucippus*, *Democritus*, *Parmenides*, *Heraclitus*, *Xenophanes*, *Philolaus*, &c. open'd no Schools that we hear of; (for we omit *Pythagoras*, as ſuperſtitious [a];) but applied themſelves to the

(1.) *The Grecian Philoſophy faulty in its Origin, and deceitful.*

[a] In another Place, the Author obſerves of *Pythagoras*, that his Doctrine and Diſcoveries principally regarded the Founding of a certain Religious Order, rather than the opening any School of Philoſophy; as may appear from the Event: becauſe his Doctrine prevailed more in the *Manichean Hereſy*, and the *Mahometan Superſtition*, than among Philoſophers.

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Diſcovery of Truth, with greater Severity and Simplicity; or with leſs Affectation and Shew. And hence, we conceive, they made a greater Progreſs [b]; only thro' Tract of Time their Works are loſt, and ſuperſeded by lighter Studies; which prove more pleaſing, and better ſuited to the vulgar Capacity and Affections: Time thus, like a River, bringing down to us ſuch Things as are light and tumid; but ſinking thoſe that are weighty and ſolid. Neither were theſe Philoſophers clear of the Fault of their Nation; but had too ſtrong an Ambition and Vanity for building Sects, and acquiring popular Fame. But the Search after Truth is to be held deſperate, when it turns aſide to ſuch empty Things as theſe. The *Egyptian* Prieſt judged, or rather propheſied, well of the *Greeks*; that they would always be Children; without *Antiquity of Knowledge, or Knowledge of Antiquity:* and indeed, they have this Property of Children, that they are ready at Talk, but unripe for Generation; their Knowledge being verbal, and barren of Works. And therefore, the *Characteriſticks* of the Philoſophy in uſe among us, taken from that Origin and Nation, are falſe and deceitful [c].

Aphorism LXXII.

The Greeks *Maſters of but little Knowledge.*

2. Nor are the *Signs* taken from the *Time* and *Age* of the *Grecian* Philoſophy, much better than thoſe taken from the Nature of the People. For

[b] The Author, in another Place, obſerves, that we have the Works of *Plato* and *Ariſtotle* extant; ſo that we may form ſome tolerable Judgment of their Philoſophies, from the Fountains themſelves: But as to *Pythagoras, Empedocles, Heraclitus, Anaxagoras, Democritus, Parmenides, Xenophanes*, &c. the Caſe is different; becauſe we have only ſome Fragments preſerved of them, and receive their Opinions at ſecond hand, or from certain Rumours: ſo that to diſcover their Philoſophies, requires greater Diligence of Enquiry, and Soundneſs of Judgment, to balance the Loſs. Upon this, the Author declares, he had, with the utmoſt Diligence and Exactneſs, collected all that related to their Opinions, from *Ariſtotle*'s Confutations thereof, or as they are cited by *Plato* and *Cicero*; the Collections of *Plutarch*, the Lives of *Laertius*, the Poem of *Lucretius*, or wherever elſe he could find the leaſt mention of them; and faithfully examined the Whole.

[c] The Philoſophies of *Plato* and *Ariſtotle* are the chief of thoſe deliver'd down, in any tolerable Perfection, to us from the *Greeks*. That of *Ariſtotle* has been diligently explained, and illuſtrated; but leſs Pains ſeems taken with the *Platonic Philoſophy*. The Author obſerves, that *Ariſtotle*'s *Philoſophy* is founded in vulgar Notions; and the uſeleſs comparing of them together; ſo as to ſhew where they claſh, and how they may be reconciled; whilſt nothing ſolid can be expected from the Man, who made the Syſtem of the World a logical Thing; and corrupted all his Natural Philoſophy with logical Terms and Notions. As for *Plato*; the Author eſteems him a Man of a more ſublime Genius, who attempted even the *Diſcovery of Forms*; and uſed the *Form of Induction*, not only in Principles, but in every thing; tho' after a fruitleſs manner; as always catching at, and receiving, *vulgar Inductions*, and *abſtract Forms*: ſo that whoever attentively conſiders his Writings and Manner, will find he was not very ſolicitous about Natural Philoſophy; only ſo far as might ſerve to keep up the Name and Reputation of a Philoſopher; and enable him to grace, or add a certain Majeſty, or Dignity, to his Civil and Moral Doctrines; whilſt, at the ſame time, he corrupted Nature as much by his *Theology*, as *Ariſtotle* did by his *Logick*; and approached as near to a *Poet*, as *Ariſtotle* did to a *Sophiſt*. See more to this purpoſe, *p.* 52, 53. of this Volume.

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For that Age had but a very slender Knowledge, both of Times, and the habitable World: which is a great Defect, especially with such as place all Things in Experience. For they had not the History of a thousand Years, that deserved the Name of a History; but only Fables, and Rumors of Antiquity. And for the different Countries of the World, they knew but a very small Part thereof; as calling all the more Northern People *Scythians*; and all the Western *Celtæ*, indiscriminately. They had no Knowledge in *Africa*, beyond the nearest Part of *Ethiopia*; nor in *Asia*, beyond the *Ganges:* and for the new World, they never heard of it; nor had any certain Tradition about it. Nay, they pronounced many Climates and Zones uninhabitable; where infinite People are found. And for the Travels of *Democritus*, *Plato*, *Pythagoras*, &c. tho' celebrated as something considerable, they were but short; and almost within their own Walls, compared with the Voyages of our Times, into numerous Parts of the new World, and the Extremities of the old: whence we are supplied with a vast Stock of Experiments. And therefore, if *Signs* are to be taken of Philosophies, in the Astrological manner, from the Times of their Generation and Nativity; no great Good is thence promised of the ancient.

APHORISM LXXIII.

3. But of all the Signs of Philosophies, none are more certain and noble, than those taken from their *Fruits:* for Fruits, and the Discoveries of Works, are as the Vouchers and Securities for the Truth of Philosophies. But from the Philosophies of the *Greeks*, and their Descents thro' particular Sciences, now for the Space of so many Years, scarce a single Experiment can be produced, tending to accommodate or improve the State of Man, that may be justly attributed to the Speculations and Doctrines of their Philosophy. And thus much is ingenuously and prudently allow'd by *Celsus*, that *Experiments in Medicine were first made, and that Men afterwards philosophized upon them, to find out and assign their Causes; but did not, contrariwise, discover and deduce Experiments from Philosophy, and the Knowledge of Causes.* Whence it was no wonder the *Egyptians*, who bestowed Divinity and Consecration upon the Inventors of Things, had more Images of Brutes, than of Men: for Brutes, by their natural Instinct, have made many Discoveries; whilst Men, with their Discourses and rational Conclusions, have made few or none [d].

(2.) *The best Signs of Philosophies, from their* Fruits.

The Greek *Philosophy has yielded none.*

4. 'Tis true, the Industry of the *Chemists* has produced some; tho' rather accidentally, and without Design; or by varying Experiments, as Mechanicks do; and not by the Rules of Art, or from Theory: for the Theory which they have imagin'd is rather hurtful than advantagious.

The Chemists a few; but casually.

[d] This, and several other Passages of the same general Kind, have been already used in the *de Augmentis Scientiarum*; but are not needlessly repeated here, because they serve to prove new Points: otherwise it might have been proper to drop them.

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So likewiſe the *natural Magicians* have diſcover'd a few light Things, that approach to Impoſture: and therefore, as 'tis a Caution in Religion, that *Faith be manifeſted by Works*; an admirable Rule may be hence derived into Philoſophy, *viz. that it be judged by its Fruit*; and held as vain, if it prove barren: and this the more, if inſtead of *Grapes* and *Olives*, it produces the Thiſtles and Thorns of Diſputes and Altercations.

Aphorism LXXIV.

(3.) *The Signs, from the Progreſs of Philoſophies.*

5. *Signs* are alſo to be taken from the Progreſs and Increaſe of Philoſophies, and the Sciences: for Things planted in Nature will grow, and enlarge; but Things founded in Opinion will differ, and not thrive. And therefore, if the ancient Doctrines had not been like Plants pluck'd up and ſever'd from their Roots, but ſtill adhered to the Womb of Nature, and were fed by her; that could not have happen'd, which we ſee has happen'd, for theſe two thouſand Years: the Sciences ſtill remaining where they were; and almoſt in the ſame Condition, without any conſiderable Improvement: nay, they rather flouriſh'd moſt in their orginal Authors, and afterwards declined. On the contrary, the mechanic Arts, which are founded in Nature, and the Light of Experience, and remaining pregnant, as it were, with Spirit, ſo long as they continue to pleaſe; are ever upon their Increaſe and Growth; being firſt rude, then faſhion'd, and, laſtly, poliſh'd, and perpetually improved.

Aphorism LXXV.

(4.) *The Confeſſion of Authors.*

6. There is another Sign to be taken from the Confeſſion of the Authors themſelves, now follow'd by Mankind: tho' this is rather a Teſtimony, of the ſtrongeſt Kind, than ſtrictly a Sign. For tho' theſe Authors pronounce upon Things with ſo much Confidence; yet at Intervals, when they come to themſelves again, they fall upon complaining of the Subtilty of Nature, the Obſcurity of Things, and the Inſufficiency of the human Nature. And if this were done in Simplicity, it might deter the Fearful from farther Enquiry; and ſtir up others of a briſker and more daring Genius, to a farther Proſecution: But not content to acknowledge only for themſelves; they place beyond the Bounds of Poſſibility, every thing that was either unknown, or untried by them or their Maſters; and thus haughtily and invidiouſly pronounce Things impoſſible to Art; and bend the Weakneſs of their own Diſcoveries, to calumniate Nature, and propagate Deſpair. Hence proceeded the new School of the *Academics*, which made Profeſſion of Scepticiſm, and condemned Mankind to eternal Darkneſs[e]: hence the Opinion, that phyſical *Forms*, or the real Differences of Things, were impoſſible, or beyond the Power of Man

[e] See above, *Aph.* 67.

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Man to discover: hence those Notions as to Operations, that the Heat of the Sun is a Thing absolutely different from the Heat of Fire; lest Men should think they might produce by Fire, some Things like the Productions of Nature. And hence proceeds the Notion, that *Composition* only was the Work of Man, and *Mixture* the Work of Nature; to keep Men from expecting any artificial Generation, or Transformation of natural Bodies [f]. And thus Men are easily persuaded, by this false Colour, not to risk their Fortunes, and their Labours, in Things not only condemned, but already given up to Despair [g].

APHORISM LXXVI.

7. We must not omit that other *Sign*; *viz.* the great Disagreement among the ancient Philosophers, and the Differences of their Schools; which sufficiently shews, that their Way from Sense to the Understanding was not well guarded; whilst one and the same Subject of Philosophy, the Nature of Things, was rent and split into so many, and such wild Errors. And altho', at present, the Dissentions and Disagreements of Opinions, as to first Principles, and entire Philosophies, are in a manner extinct [h]; yet such innumerable Questions and Controversies still remain among us, as make it plainly appear, that there is nothing fix'd and stable, either in our present Philosophies, or the manner of our Demonstrations [i]. *The Dissention of Professors.*

APHORISM LXXVII.

8. Men have an Opinion of a *general Consent* in the Philosophy of *Aristotle*; as if, after that was once published, the more ancient Philosophies ceased, and grew into Disuse; and that nothing better was discover'd in the succeeding Ages; this being so well founded, as to draw (5.) *The Argument of general Consent, fallacious.*

[f] The Author has a great Regard to the abolishing of these false Imaginations, in all the Parts of his *Instauration*. See his *Sylva Sylvarum, passim*; and the *Second Part* of the present Piece.

[g] This seems to be a grand Obstruction to the Improvement of Philosophy and Arts; and extremely difficult to remove; as having not only Mens natural Indolence to struggle with; but also their artificial and learned Despondency; in which, sober and intelligent Persons generally think they shew their Judgment. And hence new Improvements in Mechanics, Medicine, *&c.* meet with a slow Reception, by those esteem'd for Sobriety and Judgment. And tho' this Slowness may often be well placed; yet, in general, it appears to proceed from a want of knowing the Powers of *Man and Nature*; or from an inveterate Prejudice against the Possibility of doing Things not done, or not believed to have been done before. The following *fifth* and *sixth Sections* are directly levell'd at reforming this Error.

[h] As chiefly agreeing in the *Peripatetic Doctrine*.

[i] The Uncertainty of the common Demonstrations might give Occasion to the introducing of mathematical ones into Physics: and these being the most certain, if they could be universally applied, Men would then differ in Philosophy as little as they do now in Mathematics: but it may deserve a serious Consideration, whether *Mathematical Demonstrations*, applied to Matter, are suited to the Purpose; or do not, like the common Syllogism, let Nature slip through; and leave the Demonstration an empty Thing.

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draw both former and latter Times into it: But the Whole is a Fallacy. For (1.) the Works of the more ancient Philoſophers were in being to the Times of *Cicero*, and the following Ages; till the Inundation of the Barbarians upon the *Roman Empire*; when the Philoſophies of *Ariſtotle* and *Plato* were ſaved from the general Shipwreck of human Learning; as light Planks, ſupported by the Waves of Time. And (2.) that alone can be juſtly called *Conſent*, which conſiſts in a Freedom of Judgment agreeing in the ſame Thing, after due Examination: but far the greater Number of thoſe who conſent in *Ariſtotle*'s Philoſophy, are enſlaved to it by the Prejudice and Authority of others; ſo that 'tis rather an *Obſequiouſneſs* than a *Conſent*. But tho' it were a free and general *Conſent*; yet *Conſent* ought to be ſo far from paſſing for any real Authority, as to give a violent Suſpicion of the contrary: for of all Characteriſticks, that is the worſt which Men take from *Conſent*, in Matters of the Underſtanding; except ſuch as concern *Religion* and *Politicks*, which properly go by Voices. For nothing can pleaſe the Many, but what ſtrikes the Imagination; or binds the Underſtanding with the Cords of vulgar Notions [k]. So that the Thought of *Phocion* [l], may be juſtly transferr'd from Morals to Intellectuals; for *Men ought directly to examine themſelves, wherein they have err'd, or done amiſs; when the Multitude conſents, and applauds them.* This *Sign*, therefore, of general Conſent, is one of the moſt unfavourable that a Philoſophy can have [m]. And thus much for the falſe Characteriſticks of the Philoſophies and the Sciences, in uſe; whether taken (1.) from their Origins; (2.) their Fruits; (3.) their Progreſs; (4.) the Confeſſions of their own Authors; or (5.) from Conſent [n].

[k] This *Apheriſm* requires a ſtrict Attention; and unleſs the Mind be thoroughly convinced of the Truth and Certainty thereof, the Reader will, on many Occaſions, be apt to conceive, that in what follows, the Author is delivering a kind of laborious, learned Dream, inſtead of a ſolid uſeful Work.

[l] *Phocion* being once highly applauded by the Multitude; turn'd round to his Friends, and ask'd what Abſurdity he had committed. Vit. Plutarch.

[m] Becauſe, if the Conſent be general, the Vulgar alſo muſt be admitted Judges; and we all know what Judges they are, or what the Things muſt be that pleaſe the Multitude.

[n] See *Aph.* 71—77.

SECT.

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SECT. V.

Of the Cauſes *of* Errors *in* PHILOSOPHIES.

APHORISM LXXVIII.

1. WE next proceed to the numerous and prevalent *Cauſes of Errors*, and their Continuance thro' ſo many Ages; that Men may no longer wonder, how the Things we advance have hitherto been hid from them; and this alone remain the Surprize, how they ſhould now come into any one's Mind: which, however, in our Judgment, is owing to a Felicity, and not to any Excellence of Talent; ſo as rather to appear the Product of Time, than the Product of Genius *.

The Cauſes why all the former Philoſophies have erred.

2. And (1.) ſo many Ages, if juſtly conſider'd, ſhrink to a ſmall Compaſs; for of twenty-five Centuries, wherein the Memory and Learning of Mankind have been exerciſed, ſcarce ſix can be cull'd out as fertile in Sciences, or ſuitable to their Improvement: for Times, as well as Countries, have their Waſtes and Deſarts. There can be properly reckon'd but three Periods and Revolutions of Learning; one among the *Greeks*, another among the *Romans*, and the third among our ſelves, or the *Weſtern* Nations of *Europe*; to each whereof ſcarce two Centuries can be fairly attributed. The middle Ages of the World were unhappy, as to any plentiful Harveſt of the Sciences. Nor need we mention any thing either of the *Arabians*, or the *School-men*; who, in the intermediate Times, rather ground down the Sciences by numerous Treatiſes, than added to their Weight.

Viz. (1.) *Want of Times ſuited to Learning.*

* In reading the Author's Works, this ſeems to be the general Stumbling-Stone: *How ſhould he be able to do more than* Plato, Ariſtotle, *and all the Ancients put together? Shall he only be in the Right, and every Body elſe in the Wrong? Such a Conceit of a Man's own Ability is monſtrous, ſhocking, and intolerable.* This is Reaſoning by Anticipation; or in the common Way of Men. But when the Fury is over; the Queſtion to be calmly conſider'd is, *What has he done?* But to conquer Prejudice, and bring the Mind better prepared to conſider of this Queſtion, the Author here endeavours to account for the Strangeneſs of the Thing; and to pacify and reconcile the Mind, before he informs it.

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Weight [p]. And therefore, the firſt *Cauſe* of ſo little Progreſs in Knowledge, is, properly, a *Scantineſs of Times well ſuited for it.*

APHORISM LXXIX.

(2.) Little Labour beſtow'd upon Natural Philoſophy.

3. (2.) A ſecond *Cauſe*, of very great Moment, is, that thro' all thoſe Ages, wherein Men of Genius and Learning principally, or even moderately, flouriſh'd; the ſmalleſt Part of human Induſtry has been ſpent upon *Natural Philoſophy*; tho' this ought to be eſteem'd as the great Mother of the Sciences [q]: for all the reſt, if torn from this Root, may perhaps be poliſh'd, and form'd for Uſe; but can receive little Increaſe. And, 'tis manifeſt, after the *Chriſtian* Religion was receiv'd, and gain'd Ground, that much the greater Part of the fine Genius's bent themſelves to *Theology*; whereto both the nobleſt Rewards were annex'd, and all Kinds of Aſſiſtance liberally afforded. And this Study chiefly employ'd the *third* Period of Time [r] amongſt the *Weſtern Europeans*; the more, as Learning then began to flouriſh, and Controverſies about Religion to ariſe. But, in the preceding Age, during the ſecond *Period*, the principal Study and Labour of the Philoſophers, among the *Romans*, were beſtow'd upon *Morality*; which, to the *Heathens*, was inſtead of *Theology*. Beſides, the greateſt Genius's of thoſe Times chiefly applied themſelves to *Politics*; the large Extent of the *Roman* Empire requiring large Aſſiſtance. But that Time wherein *Natural Philoſophy* ſeem'd principally to flouriſh among the *Greeks*, was of ſhort Duration; and, in the ſtill earlier Ages, the ſeven *Wiſe Men*, as they were call'd, all, except *Thales*, applied themſelves to *Moral Philoſophy*, and *Politics:* and when *Socrates* afterwards brought down Philoſophy from the Heavens to Earth, the Study of Morality prevailed ſtill more; and turn'd the Minds of Men from *Natural Philoſophy*.

The Times, at beſt, unfavourable to Natural Philoſophy.

4. Nay, that very *Period* of Time, wherein natural Enquiries moſt prevail'd, was corrupted, and render'd uſeleſs by Cavils; and the Oſtentation of new Opinions. And therefore, as thro' theſe three Periods, *Natural Philoſophy* was either greatly neglected, or greatly obſtructed; 'tis no Wonder if Mankind made little Progreſs in it, whilſt their Minds were wholly bent another Way [s].

APHORISM

[p] As repeating the ſame Matter over and over again; and new modelling and dividing it, without making any conſiderable Addition thereto.

[q] Natural Philoſophy, that is, a Knowledge of Nature, appears to be the great Mother of the Sciences; becauſe neither the Arts of Speech, Logic, Medicine, Civil Policy, Morality, Religion, *&c.* can be advantagiouſly exerciſed, improved, underſtood, or inſtituted without it: and all the mechanical Arts depend upon it.

[r] See *Aph.* 78.

[s] Let Care be taken to verify or falſify this Account from *Hiſtory* as much as poſſible; wherever it may be required.

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APHORISM LXXX.

5. Add to this, that *Natural Philoſophy* ſcarce ever found one, among thoſe who ſtudy'd it, that gave himſelf wholly up thereto; eſpecially in theſe latter Times; unleſs we ſhould here and there except a Monk in his Cell, or a ſtudious Gentleman at his Country-Seat: whence this Philoſophy has always been but as a Paſſage, and Introduction, to other Things. And thus the great Mother of the Sciences is, with ſurprizing Indignity, degraded to the Office of a Handmaid; adminiſtring to the Occaſions of Medicine or Mathematics, and tending the unripe Capacities of Youth; or giving them their firſt Tincture, for the more commodious and ſucceſsful Attainment of other Kinds of Learning. (3.) *Few entirely addicted to Natural Philoſophy.*

6. But let none expect any great Promotion of the *Sciences*, eſpecially in their effective Part, unleſs *Natural Philoſophy* be drawn out to particular Sciences; and again, unleſs theſe particular Sciences be brought back to *Natural Philoſophy*. From this Defect it is, that *Aſtronomy*, *Optics*, *Muſic*, many *Mechanic Arts*, *Medicine* itſelf; and, what ſeems ſtranger, even *Moral* and *Civil Philoſophy*, and *Logics*, riſe but little above their Foundations, and only ſkim over the Surfaces and Varieties of Things; *viz.* becauſe, after theſe particular Sciences are divided off, and form'd, they are no longer nouriſh'd by *Natural Philoſophy*; which might give them new Strength and Increaſe: as from the Cauſes and genuine Conſideration of Motions, Light, Sounds, the Texture and Structure of Bodies, the Affections, and intellectual Apprehenſions. And, therefore, no Wonder if the Sciences thrive not, whilſt they are ſeparated from their Roots [t].

APHORISM LXXXI.

7. Another great Reaſon of the ſlow Progreſs of the *Sciences*, is this; that 'tis impoſſible to proceed well in a Courſe, where the End is not rightly fix'd and defined. Now the true and genuine End of the Sciences, is no other, than to enrich human Life with new Inventions, and new Powers; but much the greater Number of the *Sciences* produce nothing in this Kind; being mere Hirelings, and profeſſorial: unleſs ſometimes, by Accident, an ingenious Artificer, thro' Deſire of Glory, endeavours after ſome new Invention; which he generally purſues to his own Loſs; whilſt the Bulk of Mankind are ſo far from propoſing to enlarge the Maſs of Arts and Sciences, that they only take from the preſent Collection, or covet ſo much as they can convert to the Uſe of their Profeſſion; their own Advantage, Reputation, or ſome ſuch narrow and inferior Purpoſe [u]. But if any one of the Number does ingenuouſly (4.) *The End of the Sciences wrong fixed.*

[t] This coincides with *Aph.* 79.
[u] Does not this remain the general Caſe ſtill?

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affect a *Science* for its own Sake; yet he will be found to purſue a Variety of Thoughts and Doctrines, rather than a ſevere and rigid Enquiry after the Truth. Or if any exact Enquirer ſhould turn up; yet even he will propoſe to himſelf ſuch a meaſure of Truth, as may ſatisfy his own Mind, in aſſigning the Cauſes of Things already known; and not that which may procure freſh Pledges and Earneſts of Works, and new Light of Axioms [w]. Therefore, ſince the *End of the Sciences* has not hitherto been well fixed, and defined, by any one; we need not wonder if Men have erred and wander'd in the Things ſubſervient to the proper End.

APHORISM LXXXII.

(5.) *A wrong Way choſe.*

8. Again; if this End had been rightly propoſed; yet Men have choſe a very wrong and impaſſable Way to proceed in. And it may ſtrike any one with Aſtoniſhment, who duly conſiders it, that no Mortal ſhould hitherto have taken Care to open and prepare a Way for the human Underſtanding, from Senſe, and a well conducted Experience; but that all Things ſhould be left, either to the Darkneſs of Tradition; the giddy Agitation, and Whirlwind of Argument [x]; or elſe to the uncertain Waves of Accident, or a vague, and uninform'd Experience. Let any one ſoberly and carefully conſider, what that Way is, which Men have accuſtom'd themſelves to, in the Enquiry and Diſcovery of any Thing; and he will, doubtleſs, find, that the manner of Invention moſt commonly uſed, is ſimple and unartful; or no other than this: *viz.* when a Perſon goes upon an Enquiry, in the firſt Place he ſearches out and peruſes what has been ſaid upon it by others; in the next Place, adds his own Thoughts thereto; and, laſtly, with great Struggle of the Mind, ſollicits and invokes, as it were, his own Spirit to deliver him Oracles [y]: which is a Method entirely deſtitute of Foundation, and rolls wholly upon Opinions.

The logical Way.

9. Others may chance to call in the Aſſiſtance of Logic; but this is only a nominal Aſſiſtance: for Logic does not diſcover the Principles and capital *Axioms* upon which Arts are built [z]; but ſuch only as ſeem agreeable thereto: and when Men are curious and earneſt with it, to procure *Proofs*, and diſcover *Principles*, or firſt *Axioms*, it refers them to *Faith*,

[w] Let the more eminent of the modern Inventors, and Philoſophers, be examined by this Rule.

[x] See above, *Aph.* 10——14, 20, *&c.*

[y] This is the theoretical Philoſopher in his Study, who writes with Struggle and Pangs, out of his own Invention; inſtead of conſulting Nature and Experience, which alone afford Materials worth the recording.

[z] See *Aph.* 13, 14, *&c.*

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Faith, or puts them off with this trite and common Anſwer, that *Every Artiſt muſt be believed in his own Art* [a].

10. There remains, therefore, nothing but mere *Experience*; which offering itſelf, is call'd *Accident*; but when ſought, *Experiment*. And this kind of Experience is but like looſe Twigs [b]; and a bare feeling about for the right Way in the dark: whilſt it were much more adviſable to wait for Day, or light up a Flambeau; and then purſue the Road [c]. On the other hand, the true Method of *Experience* firſt procures the Light, then ſhews the Way, by its Means; beginning with well regulated and digeſted Experiments, (not ſuch as are wild, ſcatter'd, and rambling;) and from thence deriving *Axioms*; and, again, from theſe *Axioms*, well eſtabliſh'd, Setts of new Experiments [d]. For the *divine Word* itſelf, did not operate upon the Maſs of Things without Order. *Experience to be follow'd.*

11. Men, therefore, may ceaſe to wonder that the *Sciences* are no farther advanced; when they have entirely miſs'd the Way, and quite forſaken Experience; or elſe, bewildering themſelves therein, have courſed about it, as in a Labyrinth: for it is a well appointed Order, that muſt lead, in a continued Path, thro' the Thickets of Experience, to the open Plains of *Axioms* [e]. *And a due Order to be obſerved.*

APHORISM LXXXIII.

12. This Miſchief has obtain'd a ſurprizing Spread, from a certain Opinion, or rivetted Conceit, no leſs tumid than deſtructive; as if it were a Diminution to the Majeſty of the Mind to be long converſant in Experiments, and ſuch Particulars as are ſubject to Senſe, and confined to Matter; eſpecially as theſe Things are uſually laborious in the Enquiry, ignoble in Speculation, unpolite in Diſcourſe, ungenteel in the Practice, infinite in Number, and of little Sublimity: the Iſſue of all which is, that the true Way has not only been forſaken, but alſo block'd (6.) *The Neglect of Experiments.*

[a] This having obtained as an almoſt general Rule, the natural and mechanical Philoſophers, even of the preſent Time, are obliged to reſort to Artizans, Mechanics, and Tradeſmen, to diſcover their Practices; and learn of the Shops what Works are perform'd by Art and Induſtry: whereas, if Things were in their proper Channel; all Arts, Inventions, and Works, ſhould flow from natural Philoſopers; and Life owe thoſe Advantages to them, which it now receives from ingenious and inventive Mechanics. The Conſideration hereof ſeems to have occaſion'd that noble Deſign of Mr. *Boyle*, to put a Sett of ingenious Youths Apprentices to ſeveral *Trades*; in order, by their Communications, and Diſcoveries afterwards, to improve the State of Natural Philoſophy.

[b] *Viz.* According to the common Expreſſion, a Broom or Faggot unbound; as having little uſe, till reduced, from their ſtraggling State, into Collections of ſome Form or Order, and fit for certain Purpoſes.

[c] In alluſion to the Light which the Author, in this Piece, endeavours to ſet up.

[d] The Method in doing this, is ſhewn in the *Second Part*.

[e] See this farther explained, *Vol.* III. *p.* 316.

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up and obſtructed; and Experience not only deſerted and ill conducted, but diſdain'd [f].

APHORISM LXXXIV.

(7.) *Regard to Antiquity and Authority.*

13. Again; the Reverence of Antiquity, and the Authority of ſuch as have bore a great Reputation for Philoſophy, and thence the current Conſent, has withheld, and almoſt chain'd down Mankind from advancing the Sciences. But of *Conſent* we have ſpoken above [g].

The vulgar Notion of Antiquity erroneous.

14. The Opinion which Men entertain of Antiquity is a very idle Thing; and almoſt incongruous to the Word: for the old Age, and Length of Days of the World, ſhould, in reality, be accounted Antiquity; and ought to be attributed to our own Times, not to the Youth of the World, which it enjoyed among the Ancients: for that Age, tho', with reſpect to us, it be ancient and greater; yet, with regard to the World, it was new and leſs. And as we juſtly expect a greater Knowledge of Things, and a riper Judgment, from a Man of Years, than from a Youth, on account of the greater Experience, and the greater Variety and Number of Things ſeen, heard, and thought of, by the Perſon in Years; ſo might much greater Matters be juſtly expected from the preſent Age, (if it knew but its own Strength, and would make Trial and apply,) than from former Times: as this is the more advanced Age of the World; and now enrich'd and furniſh'd with infinite *Experiments* and *Obſervations* [h].

The Voyages of the Moderns.

15. It muſt alſo go for ſomething, that by means of the long Voyages and Travels, ſo famous in our Times, numerous Things have been procured, and diſcovered in Nature, for giving new Light to Philoſophy: and it would be ſcandalous for Mankind to have the Tracts of the *material Globe*, its Countries, Seas, and the Heavens themſelves, greatly laid open to the View of theſe Times; and yet the *intellectual World* remain within the narrow Confines of the Inventions of the Ancients [i].

16. 'Tis

[f] And ſurely, if Natural Philoſophy has received any Improvement of late, it is principally owing to the greater Reputation which Experience and Practice have gained; and the proſecuting, with ſome tolerable Care and Order, the Buſineſs of Experimenting, in a Variety of Subjects.

[g] See *Aph.* 77. See alſo *Aph.* 55.

[h] Let us beware there is no Defect in this Argument. 'Tis to be apprehended that many of the Arts known to the Ancients, are now loſt; particularly the ancient *Baliſticks*, &c. And even, if all the Knowledge and Diſcoveries of the Ancients were continued down to us; ſome will ſtill queſtion, whether the Capacities of Men in later Times are equal to thoſe of former. As to the Point of Capacity; the Author anſwers, to avoid Diſpute, that a Cripple in the right Way may beat a Racer in the wrong; and as to the Knowledge of the Ancients, he allows it to have been great; and that only ſome of their more ſuperficial and popular *Philoſophies* have deſcended to us. See above, *Aph.* 71. So that we can only judge of what we have: tho' the utmoſt Diligence ſhould, doubtleſs, be uſed to recover all the Arts, Inventions, and Philoſophies, that flouriſhed among the Ancients. See the Author's *Sapientia Veterum.*

[i] So far as we know them.

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16. 'Tis the greateſt Weakneſs to be attributing infinite Things to Authors, whilſt we are refuſing Juſtice to the Author of Authors, and all Authority; which is Time: for Truth is juſtly call'd the Daughter of Time, not of Authority. Whence 'tis no wonder, if theſe joint Faſcinations, *viz.* of *Authors*, of *Antiquity*, and *Conſent*, ſhould ſo far bind the Faculties of Men as to keep them, like Perſons poſſeſs'd, from converſing with Things themſelves [k]. *The Weakneſs of admiring Authors.*

APHORISM LXXXV.

17. And not only the Admiration of *Antiquity*, *Authority*, and *Conſent*, has conſtrain'd the Induſtry of Men to acquieſce in Things already diſcover'd; but alſo an Admiration of the Works they have long poſſeſs'd. For when a Man views that Variety and beautiful *Apparatus* of Things introduced, and provided by the mechanic Arts, for human Uſes; he is rather inclin'd to admire the Opulency of Mankind, than entertain a Senſe of their Want: not conſidering that the original Obſervations of Men, and the Operations of Nature, which proved like the Soul and firſt Mover of all this Variety [l], were neither numerous, nor derived from any great Depth of Knowledge; and that the reſt was owing only to the Patience of Men, and the ſubtile or regular Motion of the Hand, or Inſtruments. Thus, for Example, 'tis certainly a very ſubtile and accurate Piece of Workmanſhip to make a Clock, that ſhall ſeem to imitate the Revolution of the heavenly Bodies, and the Pulſation of the Bodies of Animals, by a regular and ſucceſſive Motion; and yet this depends upon but one or two *Axioms* of Nature [m]. (8.) *Admiration of the Works in uſe.*

18. And if any one ſhall conſider that Subtilty ſhewn in the liberal Arts; or the Preparation of natural Bodies by the mechanic Arts, and the like; ſuch, for Example, as the Diſcovery of the celeſtial Motions; the Notes in Muſick; the Letters of the Alphabet, (which to this Day are not uſed among the *Chineſe*;) or, again, in the mechanic Arts, the Productions of *Bacchus* and *Ceres*; that is, the Preparation of Wine, Malt-Liquors, Bread, Paſtery, the Furniture of the Table, Diſtillations, *&c.* and if, at the ſame time, he reflect, thro' what a Number of Years all theſe (except Diſtillation, which alone is not ancient) are arrived to that Degree of Perfection, wherein we now enjoy them; and yet how little of *Obſervation*, or of the *Axioms* of Nature, they have in them, (as we before inſtanced in Clocks;) and how readily, or, as it were, by obvious Occaſions, and neceſſary Conſiderations, they might be diſcover'd; will eaſily ceaſe his Wonder, and rather pity the Condition of Mankind, that *But few Inventions diſcover'd in proportion to the Time.*

[k] Obſerve how the Author endeavours to break the *Charm*, mention'd in the *Preface* under *Aph.* 7.

[l] *Viz.* The Obſervations upon which they were formed.

[m] *Viz.* The Law of Pendulums, ſuppoſe, and Elaſticity.

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that for ſo many Ages there ſhould have been ſo great a Want and Barrenneſs of Inventions. Yet all the Diſcoveries now mention'd [n], are more ancient than Philoſophy, and the intellectual Arts: ſo that, to ſay the Truth, when the rational and dogmatical Arts came upon the Stage, the Invention of uſeful Works went off [o].

Little Variety of Matter in Books.

19. If a Man turn his Eyes from the Shops to Libraries, he may perhaps be ſurprized at the immenſe Variety of Books he finds; but upon examining and diligently weighing their Matters and Contents, he will be ſtruck with Amazement on the other Side; and after finding no End of Repetitions, but that Men continually treat and ſpeak the ſame Things over and over again, fall from his Admiration of the Variety, into a Wonder at the Want and Scantineſs of thoſe Things, which have hitherto deatain'd and poſſeſs'd the Minds of Men [p].

The Procedure of the Alchemiſts.

20. And again; if any one ſhould condeſcend to regard ſuch Things as are accounted rather curious than uſeful; and take a thorough View of the Works of the *Alchemiſts*, or the Followers of *natural Magic*; he might, perhaps, be at a Difficulty which he ſhould withhold, his Tears, or his Laughter. For the *Alchemiſt* goes on with an eternal Hope; and where his Matters ſucceed not, lays the Blame upon his own Errors; and accuſes himſelf, as not having ſufficiently underſtood either the Terms of his Art, or his Author: whence he either hearkens out for Traditions and auricular Whiſpers; or elſe fancies he made ſome Miſtake, as to the exact Quantity of the Ingredients, or Nicety of the Experiment; and thus repeats the Operation without End. And if, in the mean time, among all the Chances of Experiments, he throws any which appear either new or uſeful; he feeds his Mind with theſe, as ſo many Earneſts; boaſts and extols them above meaſure; and conceives great Hopes of what is behind. It muſt, indeed, be allow'd that the Alchemiſts have made many Diſcoveries, and obliged Mankind with uſeful Inventions; but they are well repreſented in that Fable of the old Man, who left an Eſtate to his Children, (buried ſomewhere or other, he told them, in his Vineyard;) which they, therefore, fell to dig for with great Diligence; whereby, tho' they found no Gold in Subſtance, yet they received a better Vintage for their Labour.

The Procedure of the Followers of Natural Magic.

21. But ſuch as apply to *natural Magic*, and explain every thing by *Sympathies* and *Antipathies*, have, by ſupine and indolent Conjectures, placed ſtrange Virtues and Operations in Things; and if, at any time, they have produced

[n] Except Diſtillation, which was excepted before.

[o] If this, upon a fair and full Enquiry, ſhall appear to be the Caſe; it might afford a ſtrong Argument againſt admitting the rational and dogmatical Arts; or any Philoſophy, but the practical and experimental Kind.

[p] Hence the Author, in another Place, obſerves, that there is a great Agreement betwixt the Shops of Artificers, and the Libraries of the Learned; as both make a great Shew of Variety, yet contain nothing but infinite Repetitions of a few Things, or numerous Applications of a few Principles, differently dreſſed and modelled, according to particular Humours, Faſhions, or Exigencies.

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produced Works, they are rather ſuited to Admiration and Strangeneſs, than to Fruit and Advantage [q].

22. And for *ſuperſtitious Magic*, if we were diſpoſed to ſpeak thereof, it would come firſt to be obſerved, that there is only one certain and determinate Kind of Subject, in which the curious and ſuperſtitious Arts, thro' all Nations, Ages, and Religions, could take Place, and have any Effect, or impoſe [r]. But of this we ſay no more. In the mean time, 'tis no wonder if an Imagination of great Plenty has proved a Cauſe of Want. *Superſtitious Magic.*

APHORISM LXXXVI.

23. This Admiration of Mankind, as to Doctrine and Arts, which is a ſimple and almoſt childiſh Thing in itſelf, has been increaſed by the Craft and Artifice of ſuch as treat and deliver the Sciences; who propoſe them with that State and Affectation, or ſo finely faſhioned; and bring them ſo dreſſed upon the Stage, as if they were perfect in every Part; and ſo many finiſhed Things. For to look upon the Methods and Diviſions of theſe Teachers, they might ſeem to contain and include every thing that can fall within the Subject; and tho' the Parts are ill fill'd up, and in reality little more than empty Carcaſſes; yet they paſs currently among the Vulgar, as having the Form and Fulneſs of compleat Sciences [s]. (9.) *The Artifice of Teachers and Writers in the Sciences.*

24. But the primitive Enquirers after Truth, with greater Fidelity, and a happier Conduct, uſed to throw all the Knowledge they determined to collect, and treaſure up for uſe, into *Aphoriſms*, or ſhort and looſe Sentences; not ranged into Method; without profeſſing or pretending to ſet down the whole of an Art [t]. But, as the Caſe now ſtands, 'tis *The aphoriſtical Way of Writing recommended.*

[q] See *de Augment. Scientiar.* Sect. VI.

[r] The Author appears to mean that the weak, and credulous, are this Subject. He expreſſes himſelf, in another Place, thus. The *Magician*, when, according to his own Underſtanding, he ſees ſome Things effected that are beyond the Power of Nature; and thus ſuppoſing her to be once forced and ſubdued; he adds Wings to his Imagination; and ſcarce believes the Effect to differ according to the Degree of more and leſs; and therefore promiſes himſelf that he may obtain the greateſt Things of all; without conſidering that they are *Subjects of one peculiar Kind*, wherein Magic and Superſtition have had any Power and Influence, thro' all Nations and Ages. See the *Sylva Sylvarum*, under the Articles *Imagination* and *Sympathy*.

[s] This Inconvenience is very apt to attend the writing of *Syſtems*, and Bodies of Sciences; where the Writer having the Matter before him, ſeldom conſiders of any thing more than how to give it the beſt Form, and render it moſt agreeable to the Reader. This, tho' it may uſually be eſteem'd a laudable Thing, has yet a pernicious Effect, and doubtleſs retards the Advancement of the Sciences; whence it ſhould be avoided by Philoſophers, and ſevere Enquirers into Truth, as a kind of Impoſture. See *Tſchirnhauſ. Medicina Mentis* in init. See alſo *Vol.* III. *p.* 8, 9, 10.

[t] The Author thus enforces the preſent Conſideration in another Place. The firſt and moſt ancient Enquirers after Truth, with more Sincerity, and better Succeſs, threw the Knowledge they gather'd from the Contemplation of Things, and propoſed to lay up for Service, into *Aphoriſms*, or ſhort and independent Expreſſions; which ſhewing Inventions naked as they were, and

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'tis no wonder if Men make no farther Progreſs in thoſe Things, which are deliver'd as if already perfected.

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(10.) *Oſtentatious Promiſes of the Moderns.*

25. Things of Antiquity have alſo received an additional Reputation and Credit, from the Vanity and Levity of ſuch as offer'd new ones; eſpecially in the effective and operative Part of *Natural Philoſophy*. For certain boaſting and fantaſtical Perſons, partly thro' Credulity, and partly thro' Impoſture, have amuſed Mankind with great Promiſes of the *Prolongation of Life*, the *Retardation of old Age*, the *Mitigation of Pain*, the *Repair of natural Defects*, *Cures for the Deceptions of the Senſes*, *the Way of bending and exciting Affections*, *the Illumination and Exaltation of the intellectual Faculties*, *the Tranſmutation of Subſtances*, *the ſtrengthning and multiplying of Motions at Pleaſure*, *the Impreſſions and Alterations of the Air*, *the bringing down and procuring of celeſtial Influences*, *the Divination of future Events*, *the Repreſentation of Things remote*, *the Revelation of Secrets*, &c. The Truth is, there ſeems to be the ſame Difference in the Doctrines of Philoſophy, between theſe Vanities, and the real Arts; as there is between the hiſtorical Narrations of the Exploits of *Julius Cæſar*, or *Alexander the Great*; and the Atchievements of *Amadis de Gaul*, or *Arthur* of *Britain*. For thoſe celebrated Emperors are found, in Fact, to have accompliſh'd greater Things, than the other ſhadowy Heroes are even feign'd to have done: and yet this, by ſuch Means as are no way fabulous or monſtrous. Nor ſhould it detract from the Credibility of real Hiſtory, that it has ſometimes been injured and abuſed with Fables. In the mean time, 'tis not ſtrange that a great Prejudice ſhould be raiſed againſt new Propoſals, eſpecially thoſe relating to Works, upon account of theſe Impoſtors, who have attempted the like; whence the Exceſs and Diſdain of Vanity [u], have, even at preſent, left no Spirit for ſuch great Deſigns [w].

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and at the ſame time indicating the Spaces that remain'd to be fill'd with Diſcoveries; they were hence the leſs deceived, and Mens Thoughts and Minds the more excited to judge, and diſcover. On the contrary, the preſent Method is, to place the Sciences in ſuch a Light, as may procure them the moſt Credit, not excite the Judgment; and, by a ſevere Authority, to ſtop Inventions in the Bud: ſo that the Sciences now deſcend, as in the Perſons of *Maſter* and *Scholar*, inſtead of *Inventor* and *Improver*: whence no wonder if they are not advanced.

[u] *Viz.* Exceſs on one Side, and Diſdain on the other; or on the Side both of Projectors, and Anti-Projectors.

[w] And under this Diſadvantage the Author lay in his great Deſigns, for enriching the Kingdom by mineral Works; erecting his *Solomon*'s College; his Enquiries for prolonging Life; commanding the Winds, and the Weather; his *new Logic*, &c. &c.

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APHORISM LXXXVIII.

26. But the Sciences have been much more hurt by Pusilanimity; and the Slenderness of the Tasks which Men propos'd themselves: and yet, to enhance the Mischief, this Pusilanimity is not without its Pride and Disdain. (11.) *Want of proposing worthy Tasks.*

27. For first, 'tis a common Excuse with every Artist, to lay the Imperfection of his Art, as a Reproach, at the Door of Nature; and what his Art does not perform, to pronounce, from that Art, impossible in the Nature of Things; and certainly the Art will not be condemned, whilst itself is the Judge. Nay, the present Philosophy contains and patronizes some Opinions, which, if diligently examin'd, wholly tend to persuade Mankind, that nothing great, or very commanding over Nature, can be expected from Art, or the human Powers, (as we instanced above, in the Difference betwixt solar and culinary Fire, Composition, Mixture, *&c.* [x]) which, in the result, is no other than maliciously to limit Mens Faculties; and to invent, and introduce, an artificial Despair, that shall not only disturb and unsettle our Hopes and Expectations, but take away the Motives to Industry, cut its Sinews, and disappoint or prevent all the Chances of Experience; whilst the Artist is only sollicitous about this, that his Art should be esteem'd perfect: thus endeavouring at an exceeding vain and destructive Glory, in having it believed, that every Thing not yet discover'd and understood, is absolutely impossible to be found out, or known [y]. And if any one applies himself to Nature, and endeavours to strike out something new; yet he will generally propose and fix upon some one Invention, without farther Search: For Example, the Nature of the *Loadstone*, the *Tides*, the *Theory of the Heavens*, and the like; which seem to conceal some Secret; and have been hitherto unsuccessfully explained: whereas 'tis, in the highest Degree, unskilful, to examine the Nature of any Thing, in that Thing itself. For the same Nature, which in some Things lies hid and concealed, appears open and obvious in others; so as to excite Admiration in the one, and to pass unobserved in the other: thus the Nature of *Consistence* is not taken Notice of in Wood or Stone, but slighted under the Term of Solidity, without farther Enquiry into its Avoidance of Separation, or Solution of Continuity; whilst the same Thing appears subtile, and of deeper Enquiry, in Bubbles of Water, which throw themselves into thin Skins, of a curious hemispherical Figure, in order, for the instant, to avoid a Solution of Continuity. *Laying the Imperfection of Arts to the Charge of Nature.*

[x] See *Aph.* 75.

[y] Some will confine this to the more illiterate Mechanics and Artisans; and others extend it to the Liberal Sciences, Medicine, Philosophy, *&c.*

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Secrets in some Things lie open in others.

28. And, again; those very Things which are accounted Secrets, have, in other Cases, a common and manifest Nature; which can never be discover'd, whilst the Experiments and Thoughts of Men run wholly upon them [z]. And generally those Things are esteem'd new Inventions in mechanical Works, that are no more than better Ways of finishing, adorning, joining, compounding, rendering more commodious, enlarging, or contracting the Bulk of the old ones; and the like [a].

Slender Performances over-rated.

29. So that 'tis no wonder if noble and worthy Inventions, suitable to the Dignity of Mankind, are not brought to Light; whilst Men content and please themselves with such slender and childish Performances; and at the same Time imagine that they perform great Matters by them.

APHORISM LXXXIX.

(12.) *Superstition and Zeal, being opposite to Natural Philosophy.*

30. We must not omit, that *Natural Philosophy* has, thro' all Ages, had a troublesome and difficult Adversary to contend with; *viz. Superstition*, and the blind, furious *Zeal of Religion*. For we find among the *Greeks*, that they who first assign'd the natural Causes of Thunder and Storms, whilst the Ears of Men remain'd unaccustom'd to such Explanations, were condemn'd for Impiety against the Gods [b]. Nor did those meet with much better Fate, from some eminent Fathers of the *Christian Church*; who, upon infallible Demonstration, which no Man in his Senses would now oppose, asserted the spherical Figure of the Earth; and consequently the Existence of *Antipodes*.

Dangerous to philosophize, on account of the School Theology.

31. And, as Matters now stand, 'tis still more difficult and dangerous to discourse upon Nature, by reason of the *Summaries* and *Methods* of the scholastic Divines; who having imperiously reduced *Theology* to Order, and fashion'd it into an Art, have, at the same time, blended too much of the thorny and contentious Philosophy of *Aristotle* into the Body of Religion [c].

32. And

[z] Thus *Transmutation*, tho' expressly endeavour'd after, to little purpose in some Cases; yet in others seems to occur almost spontaneously. See *Sylva Sylvarum*, under the Articles *Alterations* and *Transmutations*.

[a] In another Place the Author observes, that if a Mechanic happens to add some Ornament, and a greater Lustre, to any former Invention; or combines two or three Things, that before were separate; or fits them more commodiously for Practice; or exhibits the Thing either in a greater, or a less Bulk; he presently writes himself in the List of Inventors: whence Men (1.) disdain the Invention of new Arts and Works, as an idle, fruitless, and suspected Endeavour; or (2.) believe that there are noble Inventions discover'd; but that they lie concealed, with the utmost Silence and Caution, in a few Hands; or (3) take these smaller Additions and Alterations of Inventions, for new Discoveries. All which tends to turn Mens Minds aside from the true and laborious Method of Enquiry; and prevents such Tasks and Discoveries as are worthy of Mankind.

[b] See the *Clouds* of *Aristophanes*.

[c] See *de Augment. Scientiar.* Sect. XXVIII. This occasion'd the Author a great Difficulty in his Time; tho' he was naturally inclined, and admonished by others, to use the utmost Caution against it.

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32. And to this Head belongs, tho' in a different reſpect, the Labours of ſuch as have ventured to deduce and confirm the Truth of the Chriſtian Religion, from the Principles and Authorities of Philoſophers: Thus, with great Pomp and Solemnity, celebrating the Inter-Marriage of *Faith* and *Senſe*, as a lawful Conjunction; and ſoothing the Minds of Men with a pleaſing Variety of Matter; tho' at the ſame time raſhly and unequally intermixing Things divine and human. But in ſuch Medlys of Divinity and Philoſophy, only the Things at preſent receiv'd in Philoſophy are comprehended; whilſt new ones, tho' better, are almoſt quite rejected and excluded [d]. *The Mixture of Philoſophy with Religion.*

33. Laſtly, we find, thro' the Unſkilfulneſs of certain Divines, that the Paſſage to any Philoſophy, tho' ever ſo juſt, is in a manner block'd up: For ſome weakly ſuſpect, that deep Enquiries into Nature will tranſgreſs the Bounds of Sobriety; and injudiciouſly wreſting what is ſaid in Scripture, of thoſe who pry into the *divine Myſteries*, apply it to the Secrets of Nature; from which we are no where forbid. Others, with greater Cunning, conceive, that if the *Means* remain unknown [e], all Things may be the eaſier managed by the Dexterity of the *Hand*, and the *divining Rod*; which they imagine highly ſerviceable to Religion: but this is no other than offering to God the *unclean Sacrifice of a Lye* [f]. Others dread the Example; leſt the Diſturbances and Changes in Philoſophy ſhould extend to, and terminate in Religion. And others, again, ſeem afraid, leſt ſomething ſhould be found in the Enquiry of Nature, to ſubvert, or at leaſt undermine Religion; eſpecially among the Ignorant. Theſe two latter Fears appear to us to be deeply tinged with low grovling Wiſdom; as if Men, in their ſecret Thoughts, cheriſh'd ſome Doubt and Diſtruſt about the Strength of Religion, and the Power of Faith over the Senſes; and therefore apprehend Danger to it from the Search of Truth, in natural Things: but whoever rightly conſiders it, will find, that Natural Philoſophy is, next after the Word of God, the moſt certain Cure of Superſtition; and the beſt Support of Faith. Philoſophy, therefore, is deſervedly appointed as the true Handmaid to Religion; the one manifeſting the *Will*, and the other the *Power* of God. For 'twas no Error in him who ſaid, *Ye err, not knowing the Scriptures, and the Power of God:* thus inſeparably mixing, and joining together the Information of his *Will*, and the Knowledge of his *Power*. 'Tis, therefore, the leſs Wonder, that Natural Philoſophy has been ſo little improved, when Religion, whoſe Power over Mens Minds is exceeding great, has, thro' the Ignorance and unwarrantable Zeal of ſome, been made to oppoſe it. *The Opinion, that deep natural Enquiries ſhould ſubvert Religion.*

[d] See *de Augment. Scientiar.* Sect. XXVIII. and *Supplem.* XVI, XVII.

[e] *Viz.* If Men are kept in Ignorance.

[f] For Knowledge can never make Men irreligious; or independent upon God. See *Vol.* I. *p.* 16—18.

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APHORISM XC.

(13.) *Schools and Academies proving unfavourable to Philoſophy.*

34. Again; in the Cuſtoms and Inſtitutions of Schools, Univerſities, Colleges, and the like Conventions, deſtin'd for the Seats of learned Men, and the Promotion of Knowledge, all Things are found oppoſite to the Advancement of the Sciences: for the *Readings* and *Exerciſes* are here ſo managed, that it cannot eaſily come into any one's Mind to think of Things out of the common Road. Or if here and there one ſhould venture to uſe a Liberty of Judging, he can only impoſe the Taſk upon himſelf; without obtaining Aſſiſtance from his Fellows: and if he could diſpenſe with this, he will ſtill find his Induſtry and Reſolution a great Hindrance to the raiſing of his Fortune. For the Studies of Men in ſuch Places are confin'd, and pinned down to the Writings of certain Authors; from which, if any Man happens to differ, he is preſently reprehended as a Diſturber and an Innovator. But there is ſurely a great Difference between *Arts* and *Civil Affairs:* for the Danger is not the ſame from *new Light*, as from *new Commotions*. In Civil Affairs, 'tis true, a Change even for the better is ſuſpected, thro' Fear of Diſturbance; becauſe theſe Affairs depend upon Authority, Conſent, Reputation, and Opinion, and not upon Demonſtration: But Arts and Sciences ſhould be like Mines, reſounding on all Sides with new Works, and farther Progreſs. And thus it ought to be, according to right Reaſon; but the Caſe, in Fact, is quite otherwiſe. For the above-mentioned Adminiſtration and Policy of Schools and Univerſities, generally oppoſes and greatly prevents the Improvement of the Sciences [g].

APHORISM XCI.

(14.) *Want of Rewards.*

35. And tho' this Contrariety ſhould ceaſe; yet 'tis ſufficient to check the Progreſs of the Sciences, that ſuch Endeavours and ſuch Induſtry are not rewarded [h]: for thoſe who cultivate the Sciences, have not the Power of rewarding. The Improvement of the Sciences proceeds from great Capacities; but the Salaries and Rewards for them lie in the Hands of the Vulgar; or ſuch Rulers of State as are rarely Men of conſiderable Learning. And what is more, ſuch kind of Advancement not only fails of Reward, and Encouragement, but is deſtitute even of popular Praiſe; as being above the Reach of the Crowd, and eaſily beat down and extinguiſhed by the Winds of vulgar Opinion. Whence, again, 'tis no Wonder that this Buſineſs has proceeded no better; whilſt, inſtead of Encouragement, it has met with Diſeſteem.

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[g] See more upon this Subject, *Vol.* I. *p.* 39—42.
[h] See above, *Aph.* 90.

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APHORISM XCII.

36. But the greateſt Obſtacle of all, to the Progreſs of the Sciences, and the Undertaking of new Taſks and Provinces in them, lies in the Deſpair of Mankind, and the Suppoſition of Impoſſibility. For prudent and exact Men, generally diſtruſt ſuch kind of Attempts; upon conſidering with themſelves the Obſcurity of Nature, the Shortneſs of Life, the Fallacy of the Senſes, the Weakneſs of the Judgment, the Difficulties of Experimenting, *&c.* Whence they conceive, that there are certain Ebbings and Flowings of the Sciences, thro' all the Revolutions of Times and Ages; ſo as one while to increaſe and flouriſh, and another to decline and lie neglected; and, when arrived at one certain State and Degree, to become uncapable of riſing higher [i]. Therefore, if any Man ſhould hope or undertake for the contrary, they think it the Sign of a weak and unripen'd Judgment; and that ſuch Attempts begin with Pleaſure, proceed with Difficulty, and end in Confuſion. (15.) *Deſpair, and the Suppoſition of Impoſſibility.*

37. And as theſe are Thoughts which readily occur to grave and judicious Men; we muſt indeed beware, leſt being our ſelves caught with the Love of a Thing that has an excellent and beautiful Appearance, we ſhould ſlacken the Reins of Judgment. We ſhall, therefore, next proceed, with Care, to examine what Degree of Hope there is of future Succeſs, and from what Quarter it ariſes; (with the Purpoſe of rejecting the lighter Gales thereof;) and diligently diſcuſs and weigh thoſe Grounds that appear the ſtrongeſt. And here *Civil Prudence* alſo is to be conſulted; which diſtruſts by *Preſcription*; and ſuſpects the worſt of human Affairs [k]. And whilſt we thus enquire into the Grounds of *Hope*, we our ſelves make no Promiſes, offer no Violence to the Mind, and lay no Snares for the Judgments of Men: but only lead them by the Hand. *Tranſition.*

[i] See Sir *Thomas Bodley*'s Letter to the Author, *Vol.* I. *Supplem.* V. *p.* 487.
[k] See above, *Aph.* 75.

SECT.

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SECT. VI.

Of the GROUNDS OF HOPE, *for the farther Advancement of* PHILOSOPHY *and the* SCIENCES.

APHORISM XCIII.

The greateſt Motive of Hope, to be found in the fourth Part of the Inſtauration.

1. THO' the moſt powerful Motive of *Hope*, will hereafter be deliver'd, (when we ſhall lead Mankind to Particulars; eſpecially as we propoſe to digeſt and range them in our *Tables of Invention*, which principally belong to the *fourth* Part of our general Deſign [a];) where Things themſelves, rather than Hopes, will be offer'd; yet, that all may be done in the ſmootheſt manner, we ſhall here proceed in our Purpoſe of preparing the Minds of Men. And in giving them a View of the *Hope* there is for improving the Sciences, conſiſts no ſmall Part of this Preparation; as, without it, all the reſt has a greater Tendency to deject Mankind, than raiſe them to a chearful and induſtrious Proſecution of Experiments; and only give them a meaner Opinion of the Things they at preſent enjoy, and a deeper Senſe of their own Misfortune. We ſhall, therefore, here open and propoſe our Conjectures, for rendering the more favourable Expectations of the Sciences probable; in Imitation of *Columbus*, who, before he undertook his ſurprizing Expedition thro' the *Atlantic* Ocean, produced his Reaſons why he expected to find new Lands and Continents, beſides thoſe that were then diſcover'd: Which Reaſons, tho' at firſt rejected, yet being afterwards confirmed by Experience, were the Cauſe and Origin of very great Things.

2. We

[a] See *Vol.* III. *p.* 3—18, *&c. &c.*

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2. We begin with God, the Author of all Good, and the Father of Lights; from whom the Goodneſs of this Deſign manifeſtly ſhews it to proceed. We ſee in the divine Works, that the ſmalleſt Beginnings are certainly ſucceeded by the Effects. And what is ſaid of ſpiritual Things, that *the Kingdom of God comes not with Obſervation*; is alſo found true in every great Work of divine Providence; where all things go quietly on, without Noiſe or Buſtle: ſo that the Whole is accompliſh'd, before Men imagined or took Notice that it was in hand. And we ſhould here remember the Prophecy of *Daniel*, concerning the latter Ages of the World: *Many ſhall go to and fro upon the Earth, and Knowledge ſhall be increaſed:* Thereby plainly intimating it to be the Deſign of Providence, that when the World was laid open to a general Intercourſe; as by our numerous long Voyages it now begins to be; at the ſame Time alſo the Sciences ſhould receive Increaſe [b].

The Goodneſs of the Deſign, a Motive of Hope for improving Philoſophy.

APHORISM XCIV.

3. A capital Reaſon of our Hope, may be alſo derived from the Errors of paſt Times; and the Ways that ſtill remain untried. The following Reprehenſion of a civil State, that had ſhewn little Conduct in in its Affairs, is excellent [c]. "What, with regard to Times paſt, is the "worſt; ſhould, for the Time to come, be eſteem'd the beſt. For if "you had perform'd your Duty to the full, and yet your Affairs had "gone backwards; there would have been no *Hopes* of their Amend-"ment: but, as the bad Poſture of your Affairs proceeds, not from Ne-"ceſſity, but from your own Errors; there is room to *hope*, that when "thoſe Errors are forſaken, or corrected, a great Change for the better "may enſue." In like manner, if Mankind had, for ſo many Ages, held on in the true Courſe of diſcovering and improving the Sciences, and yet could have advanced them no higher; it would indeed be bold and preſumptuous, to believe them capable of farther Improvement: but if the Way itſelf has been miſtaken [d]; and the Labour of Mankind been beſtowed where it ought not; it follows, that the Difficulty does not ariſe from hence, that Things lie out of our Reach; but from the Underſtanding itſelf, its manner of Uſe, and Application; which may ſtill be remedied [e]. It were, therefore, adviſable to enumerate theſe very *Errors:* for ſo many Impediments as paſt Errors have proved, ſo many Arguments there are

The Errors of the Ancients to be removed, and new Ways to be tried.

[b] We may now be enabled, in ſome meaſure, to judge how far theſe Grounds of Hope were ſolid, and well laid. Certainly a great Revolution in Philoſophy has gradually enſued upon the Endeavours of the Author; and Philoſophers have been inſenſibly drawn off from *Speculation* and *Theory*, to *Practice* and *Experience:* whence many uſeful Inventions and Works have proceeded; and more may, perhaps, proceed.

[c] The Reprehenſion of *Demoſthenes* to the *Athenians*.

[d] See above, *Aph.* 81, 82, 83, *&c.*

[e] See hereafter, *Aph.* 105, 106. and *Part* II. throughout.

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are of future Hope. And tho' we have already touched upon them above [f]; yet we think proper here again to repreſent them, in a conciſe, naked, and ſimple manner.

APHORISM XCV.

The rational and experimental Faculties to be united.

4. Thoſe who have treated the *Sciences*, were either *Empirics*, or *Rationaliſts*. The Empirics, like Ants, only lay up Stores, and uſe them; the Rationaliſts, like Spiders, ſpin Webs out of themſelves: but the Bee takes a middle Courſe, gathering her Matter from the Flowers of the Field and Garden; and digeſting and preparing it by her native Powers. In like manner, that is the true Office and Work of Philoſophy, which, not truſting too much to the Faculties of the Mind, does not lay up the Matter, afforded by *Natural Hiſtory* and *Mechanical Experience*, entire or unfaſhion'd, in the Memory; but treaſures it, after being firſt elaborated and digeſted in the Underſtanding [g]: and, therefore, we have a good Ground of Hope, from the cloſe and ſtrict Union of the experimental and rational Faculty; which have not hitherto been united [h].

APHORISM XCVI.

Natural Philoſophy to be pure.

5. Natural Philoſophy is not hitherto found pure, but infected and corrupted; in the School of *Ariſtotle*, by Logic; in that of *Plato*, by Theology; in the ſecond School of *Plato*, *Proclus*, and others, by Mathematics, which ought only to terminate *Natural Philoſophy*, and not to generate or create it [i]. And, therefore, we have another Ground of Hope, from a *Natural Philoſophy* pure and unmixed.

APHORISM XCVII.

The Mind to be purged.

6. No Man has yet appeared, of ſo great Conſtancy and Firmneſs of Mind, as to impoſe upon himſelf the total Extirpation of Theories, and

[f] *Sect.* V. *Aph.* 78—92.

[g] This is the Office and Deſign of the Author's *Sylva Sylvarum*.

[h] The Author, however, cautiouſly obſerves in another Place, that there have been ſome Empirical Philoſophers, who would not be eſteem'd merely empirical; and, again, ſome Rationaliſts, who deſired to appear induſtrious, and verſed in Experience; but that this was only the Artifice of certain Men, in endeavouring to raiſe themſelves a Character and Reputation, for excelling in their different Sects: whilſt, in reality, the two Faculties were ever ſeparated, and almoſt oppoſed to each other.

[i] See *Vol.* I. *p.* 90, 91. Here ſeems to be a Direction of great Moment, for the Advancement of genuine Philoſophy; which certain Men conceive cannot be ſo effectually promoted, as when Mathematics preſides therein, and directs. But this ſhould be farther conſider'd; and without all Partiality to Mathematics: for the Logician would have his Art preſide in Philoſophy; the Chemiſt his; and the Metaphyſician is apt to reduce all to Abſtraction and Ideas. Certainly Philoſophy ſhould refuſe none of theſe Helps: but to make choice of any one of them, ſo as to exclude the reſt, muſt needs occaſion a partial Philoſophy. And hence the Chemical Philoſophies, the Logical Philoſophies, the Metaphyſical Philoſophies, and even the Mathematical Philoſophies, cannot, perhaps, be ſafely depended upon.

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and common Notions; and offer the Understanding quite plain and smooth, to receive Particulars anew: and, therefore, that Knowledge we have, is nothing more than an undigested Heap, and Collection, of much Faith and Accident, mix'd with abundance of childish Notions, imbibed in our Youth [k]

Wrong Ideas to be discharged.

7. Whence, if any one of riper Years, sound in his Senses, and of a clear, unbiassed Mind, were to apply himself afresh to Experience and Particulars; better Things might be expected from him. And in this respect, we promise our selves the Fate of *Alexander the Great*. But let us not presently be accus'd of Vanity, before the End of the Story be heard; which regards the laying aside of all Vanity.

The Author *compared to* Alexander.

8. For *Æschines*, speaking of *Alexander* and his Exploits, has these Words: "Surely we lead no mortal Life; but are born to this "End alone, that Posterity should relate strange Things of us." As if he esteem'd the Atchievements of *Alexander* miraculous. But *Livy* coming, long afterwards, to consider, and look better into the Thing, said of it, that "*Alexander* did no more than dare to despise Vanities." And such a Judgment we expect Posterity will pass upon us; *viz.* that we have done no great Matter; but only esteem'd those as little Things, which were accounted great ones. In the mean time, there is no Hope, as we before observed, but in the Regeneration of the Sciences; or the raising and building them up anew, in a certain Order, from Experience: which no one, perhaps, has hitherto attempted or thought of [l].

APHORISM XCVIII.

A just Foundation not hitherto laid for Experience.

9. And for the *Foundations of Experience*; which is the next Thing we must proceed to; they either have not hitherto been laid, or very weakly. Nor has a Collection of Materials, competent either in Number, Kind, or Certainty, for informing the Understanding, or any way sufficient, and worthy of the End proposed, been hitherto made: but, on the contrary, learned Men, after an easy, indolent manner, have received certain Rumours of Experience, and the popular Reports and Tales thereof, both for building and strengthening their Philosophy; and given them the Weight of strong Testimonials: which is just as if a Kingdom should govern itself, not according to the Advices and Intelligences of its Ambassadors, and trusty Officers in foreign Courts; but by the idle Rumours, and common Town-talk of its People. For as to Matter of Experience, there is nothing hitherto well discovered, verified, adjusted, weighed, or measured, in *Natural History:* but whatever is undefin'd and vague in Observation,

[k] See above, *Aph.* 19, 27, 28, 29.

[l] Let Antiquity be farther searched upon this Head; as also the *Chinese* History, and the Histories of other ancient Nations consulted; to see if nothing of this kind was ever proposed before. What the Author means, will fully appear hereafter, under *Sect.* VII. but more particularly in the *Second Part* of this Work. See also above, *Aph.* 21.

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muſt needs be fallacious and deceitful in the Information. And if this ſhall ſeem ſurprizing, or the Complaint appear unjuſt, to any one; whilſt ſo great a Philoſopher as *Ariſtotle*, aſſiſted with the Purſe of ſo great a Prince as *Alexander*, has compiled ſuch an exact *Hiſtory of Animals*; and whilſt ſome others, with greater Diligence, tho' with leſs Buſtle, have contributed many Things thereto; and whilſt others, again, have wrote copious Hiſtories, and Accounts of Plants, Metals, and Foſſils; he does not ſeem ſufficiently to underſtand our Meaning. A *Natural Hiſtory*, compiled for its own ſake, is one thing; and a *Natural Hiſtory*, collected for informing the Underſtanding, in order to the building up of *Natural Philoſophy*, is another. And theſe two Hiſtories, as they differ in other reſpects; ſo principally in this, that the former contains various Deſcriptions of natural Bodies, but not Experiments of mechanic Arts. For as, in civil Life, the Temper of a Man, and the ſecret Diſpoſitions of his Mind and Affections, are better underſtood, when he is ruffled, than otherwiſe; ſo the Secrets of Nature are better got out by the Torturing of Arts, than when ſuffer'd to take their own courſe. And, therefore, we may then have good *Hopes* of *Natural Philoſophy*, when *Natural Hiſtory*, which is the Baſis thereof, ſhall be better ſupplied; and not before [m].

APHORISM XCIX.

A want of informing Experiments.

10. Again; in the very Stock of *mechanical Experiments*, there is a great Want of ſuch as principally conduce to the Information of the Underſtanding. For the Mechanic, being no way concerned about the Diſcovery of Truth, applies his Mind, and ſtretches out his Hand, to nothing more than is ſubſervient to his Work: but we may then rationally expect to ſee the *Sciences* farther advanced, when numerous Experiments ſhall be received, and adopted into *Natural Hiſtory*, which of themſelves are uſeleſs; and tend only to the Diſcovery of *Cauſes* and *Axioms*: Theſe being what we call *Experiments of Light*, to diſtinguiſh them from *Experiments of Profit*. And they have this wonderful Property, that they never deceive or fruſtrate the Expectation: for being uſed, not in order to effect any Work; but for diſcloſing of natural Cauſes, in certain Particulars; let them fall which way they will, they equally anſwer the Intention, and ſolve the Queſtion [n].

APHORISM C.

A better Order in Experimenting.

11. And not only a larger Stock of Experiments is to be ſought, and procured, of a different Kind from what has hitherto appeared; but alſo a quite different Method, Order, and Procedure, is to be introduced, for

[m] See *Vol.* III. *p.* 8—16.
[n] See the *Sylva Sylvarum*, paſſim.

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for continuing and advancing Experience itſelf: for vague Experience, that purſues nothing but itſelf, is, as was before obſerved, a mere groping about in the dark [o]; and rather amazes Mankind, than informs them. But when Experience ſhall be conducted by certain Laws, orderly and conſequentially, we may have better Hopes of the Sciences [p].

APHORISM CI.

12. And when a proper Quantity of ſuitable Materials, for ſuch a *natural* and *experimental Philoſophy*, as is required for the Work of the Underſtanding, or the Buſineſs of Philoſophy, ſhall be provided, and got ready; yet the Underſtanding is no way qualified to act upon theſe Materials ſpontaneouſly, and by Memory; no more than a Man ſhould expect to make the Calculations for an Almanack, by the bare Strength of his Memory. Yet *Contemplation* has hitherto been more employ'd in *Invention* than *Writing:* nor is Experience yet made learned [q]. But no Invention ſhould be allow'd, or truſted, except in Writing. And when this comes into uſe, ſo that Experience may be made a Matter of Learning and Science, we may then have better Hopes [r]. *Inventions to be wrote down.*

APHORISM CII.

13. Again; the Number, or, as it were, the Army of Particulars, being ſo large, ſcatter'd, and confuſed, as to diſtract and confound the Mind; little Good can be expected from the Skirmiſhes and Sallies of the Underſtanding; unleſs it be fitted, and brought cloſe to them, by means of proper, well-diſpoſed, and actuating *Tables of Invention*, containing ſuch Things as belong to the Subject of every Enquiry: and unleſs the Mind be applied to receive the prepared and digeſted Aſſiſtance they afford [s]. *Hiſtorical Materials to be tabled.*

APHORISM CIII.

14. And even when a Stock of Particulars is exactly and orderly placed before us; we muſt not immediately paſs on to the Enquiry, and Diſcovery, of new Particulars, or Works: at leaſt, if this be *Axioms to be formed from Experiments.*

[o] See above, *Aph.* 82.

[p] See *Vol.* I. *p.* 119—125. and hereafter in the *Second Part*, paſſim.

[q] See *Sect.* XII. of *Learned Experience*, in the *de Augment. Scientiar.*

[r] The Caution here laid down is extremely neceſſary: for the natural Powers of the Mind are ſo infirm, and weak, as by no means to be truſted, in the Buſineſs of Invention, Obſervation, or Experiment. We ſee it is common for Men, after ſome Time, to forget their own Obſervations and Experiments. Nor is the Memory ſufficiently ready and apt to preſent Things as they may be wanted; nor the Judgment always clear, ſtrong, and in right Order. So that even natural Things, whilſt they dwell only in the Memory, or Imagination, ſeem litt'e better than Phantoms; and require to be diſtinctly wrote down, for the Service of Philoſophy. See hereafter, *Part* II. *paſſim.*

[s] See hereafter, *Part* II. *Sect.* I. See alſo, *Vol.* III. *p.* 320—340.

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done, we muſt not dwell upon it. We deny not, that, after all the Experiments of every Art ſhall be collected, digeſted, and brought to the Knowledge and Judgment of a ſingle Perſon; many new Diſcoveries may be made, for the Uſe and Advantage of Life, thro' the Tranſlation of the Experiments of one Art into another; by means of what we call *Learned Experience* [t]: yet leſs Hope is to be conceived hereof; and a much greater of a *new Light of Axioms*, drawn regularly, and in a certain manner, from thoſe Particulars; ſo that ſuch *Axioms* may again point out, and lead to new Particulars. For the Way lies not thro' a Plain; but thro' Mountains and Valleys: firſt aſcending to *Axioms*, and then deſcending to *Works* [u].

APHORISM CIV.

Axioms to be formed in a new manner.

15. But the Underſtanding muſt not be allowed to leap, or fly from Particulars, to remote, or the moſt general kind, of *Axioms*, at once; (ſuch as are called the *Principles* of Arts and Things [w];) and ſo prove, and draw out, middle *Axioms*, according to the eſtabliſhed Truth of the former; as has hitherto been done by a natural Sally of the Underſtanding: which is naturally inclined this Way; and has been long trained and accuſtomed to it, by the Uſe of thoſe Demonſtrations, which proceed upon *Syllogiſm* [x]. But we may conceive good Hopes of the Sciences, when, by continued Steps, like *real Stairs*, *uninterrupted or broken*, Men ſhall aſcend from Particulars to leſſer *Axioms*; and ſo on to middle ones; from theſe again to higher; and laſtly, to the moſt general of all [y]. For the loweſt *Axioms* differ not much from bare Experience [z]; and the higheſt, and moſt general ones, as they are now eſteem'd, prove only notional, theoretical, and of no Solidity; whilſt the *middle Axioms*, are the real, the ſolid, and animated Kind, wherein the Affairs and Fortunes of Men are placed [a]: and above theſe, come ſuch as are truly the moſt

[t] See *Vol.* I. *p.* 119.

[u] This will be more fully explained in the *Second Part*. See alſo *Vol.* III. *p.* 316. The Author intended to treat of the *aſcending* and *deſcending Scale of Axioms*, as a Part of the preſent Work; but it was never publiſhed. And as this Method has not, that we know of, been hitherto tried, it affords an Argument of Hope, that Philoſophy and the Sciences may be improved by its means.

[w] Suppoſe the Fiction of the Four Peripatetic Elements, which have been made the Baſis of Natural Philoſophy; the Salt, Sulphur, and Mercury of the Chemiſts; the *Fuga Vacui*, &c.

[x] See above, *Aph.* 13, 14, 19, 20, 25, &c.

[y] This was the Deſign of the *Scala Intellectûs*: and how the Thing was propoſed to be effected, may be ſeen by Examples in the Author's Hiſtory of *Life* and *Death*, *Winds*, &c. See *Vol.* III. *p.* 8—16.

[z] Such as in *Chemiſtry*, that animal Subſtances yield no fixed Salt, by Calcination; in Muſic, that Concords intermixed with Diſcords, make Harmony, &c.

[a] Such as in *Optics*, that the Angle of Incidence is equal to the Angle of Reflexion, in all Sorts of Surfaces; in *Phyſics*, Sir *Iſaac Newton*'s three *Laws of Motion*, &c.

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moſt general; yet not metaphyſical; but juſtly limited by theſe intermediate ones [b].

16. And, therefore, the Underſtanding does not want Sail, ſo much as Ballaſt; to keep it from ſkipping and bounding: but as this is hitherto a *Deſideratum*; when it ſhall be ſupplied, we may have better Hopes of the *Sciences*. *The Underſtanding to be kept ſteady.*

APHORISM CV.

17. Again; a different Form of *Induction*, from what has hitherto been uſed, muſt be invented, for the raiſing of *Axioms*: and that not only for the diſcovering and proving of *Principles*, as they are call'd; but likewiſe for aſcertaining the leſſer, middle, and, in ſhort, all kinds of *Axioms*. For that *Induction* which proceeds by ſimple Enumeration, is a childiſh Thing; concludes with Uncertainty; ſtands expoſed to Danger from *contradictory Inſtances*; and generally pronounces upon ſcanty *Data*; and ſuch only as are ready at hand [c]: but the *Induction* uſeful in the Diſcovery and Demonſtration of *Arts* and *Sciences*, ought to ſift Nature, by proper *Rejections* and *Excluſions*; and then conclude upon *Affirmatives*, after the due Number of Negatives are thrown out: a Thing never yet done, nor attempted; unleſs by *Plato*, who made ſome little Uſe of this Form of *Induction*, in the ſifting of Definitions and Ideas [d]. But for the juſt and regular forming of this *Induction*, or *Demonſtration*, numerous Particulars are required, which have been hitherto thought of by no Mortal; ſo that greater Pains muſt be beſtowed upon it, than has been beſtowed upon *Syllogiſms*. And the Aſſiſtance of this *Induction* muſt be uſed, not only for the diſcovering of *Axioms*; but alſo for the defining of *Notions* [e]. And in this Buſineſs of *Induction* is lodged the greateſt Hope of improving the Sciences. *A new Form of Induction.*

APHORISM CVI.

18. But in forming theſe *Axioms* by this *Induction*, it muſt be well examin'd and try'd, whether the *Axiom* intended be only adapted, and made according to the meaſure of thoſe *Particulars* from which it is extracted; *The Caution required in forming Axioms by its Means.*

[b] The higheſt Sort may be called *Axioms* of *Axioms*; and were intended to make the ſixth and laſt Part of the *Inſtauration*: but it ſhould ſeem that Philoſophy in the general, or the Author's Method in particular, has not been ſo far proſecuted as to afford them. For *Approximations* ſee the imperfect Canons, or Axioms, at the Cloſe of the *Hiſtory of Winds*, *Life and Death*, &c. See alſo below, *Aph.* 105, 106.

[c] See above, *Aph.* 13, 17, 19, 20, 24, 25, *&c.*

[d] See above, *Aph.* 71. This Buſineſs of Induction is farther explained in another Place, thus. Such a *Form of Induction* may be introduced, as to draw ſome *General Concluſion* from *certain Particulars*; ſo as at the ſame Time to demonſtrate, that no *contradictory Inſtances* can be found: for otherwiſe we might eaſily pronounce upon too few *Particulars*; and theſe alſo of the obvious kind.

[e] See above, *Aph.* 19. See alſo *Part* II. *Sect.* I. *paſſim.*

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tracted; or whether it be larger, and extend beyond them[f]. If it be more extenſive, regard muſt be had whether it confirms its own Extenſiveneſs, by promiſing well; that is, by deſigning, or pointing out new Particulars: leſt otherwiſe we ſhould either ſtick in Things already known; or elſe, with a weak Endeavour, catch at Shadows, and *abſtract Forms*; and not graſp ſuch Things as are ſolid, and fix'd in Matter[g]. And, when this Practice ſhall take Place, a ſolid Hope will juſtly attend it.

APHORISM CVII.

Philoſophy to be extended to the Sciences, and they brought back to Philoſophy.

19. And here ſhould be repeated what we ſaid above, concerning the extending of *Natural Philoſophy*, and the bringing *particular Sciences* back again thereto[h]; ſo as to prevent all rending and diſmembring of the Sciences. For, unleſs this be done, there is leſs Hope of their farther Advancement. And ſo much for preventing *Deſpair*, and exciting *Hope*, by way of forſaking or rectifying the Errors of Times paſt. We proceed next to conſider what other Motives of Hope are ſtill behind.

APHORISM CVIII.

Diſcoveries may be expected from diligent Enquiry.

20. And, firſt, ſince many uſeful Things have been diſcover'd, as it were by Accident, or Neceſſity; without any Enquiry, or particular Regard, on the Side of Men; there can be no doubt, but if Men were to look out, and bend their Minds to it, in a certain Method and Order; and not by Fits and Starts; that many more Diſcoveries would be made. For altho' it may now and then happen, that a Man ſhall accidentally hit upon a Thing, which had before eſcaped a great and diligent Search; yet, queſtionleſs, the contrary is found in the Whole of Things: and, therefore, many more, and much better Diſcoveries, are to be expected from the *Reaſon* and *Induſtry*, the *Direction* and *Intention*, of Mankind; and that in leſs Time; than from Chance, the Inſtinct of Brutes, *&c.* which have hitherto given the firſt Hints of Diſcoveries[i].

APHORISM CIX.

Many unexpected Diſcoveries made.

21. It may likewiſe be an Argument of farther *Hope*, that ſome of the Things already diſcover'd, are ſuch, as, before their Diſcovery, did not

[f] Theſe are the *Axioms* which the Author principally intends; *viz.* not ſuch as ſhall be made to fit a few particular Inſtances; which are no more than naked Expreſſions of the Reſult of certain Facts; but ſuch as ſhall far exceed the Particulars from whence they were drawn; mark out new Particulars; and lead to greater Diſcoveries.

[g] The Meaning of this is largely explained in the *Second Part* of the preſent Work.

[h] See above, *Aph.* 80.

[i] See above, *Aph.* 74—85. See alſo *de Augment. Scientiar.* Sect. XIII.

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not enter into Mens Minds even to suspect; so that any one would have despised them as Impossibilities. For it is an usual Way with Mankind, to form Conjectures of new Things, according to the Examples of old ones; and according to the Opinion thence preconceived, and entertained: which is a very fallacious Manner of Judging; for many Particulars derived from the Fountains, or Origins of Things, do not flow in the common Channels [k].

22. So, if a Man, before the *Discovery of Ordnance*, should have thus described the Thing by its Effects; *viz.* that there was a certain Way of battering down Walls, and the strongest Fortifications, at a great Distance; Mens Thoughts would have run upon multiplying the Force of their common Engines of War, the known Battering-Rams and Machines, by the Means of Weights, Wheels, and the other mechanical Powers; but scarce any one would have suddenly fallen upon the Invention of raising a fiery Wind, that should blow out of a Tube, with such prodigious, expansive Violence, as to produce the above-mention'd Effect: an obvious Example thereof, having never been seen, unless, perhaps, in Earthquakes, or Thunder-Storms; which, as being grand Works in Nature, Men would presently have rejected as inimitable by Art [l]. *Ordnance.*

23. So, likewise, before the *Invention* of *Silk*; if any one should have said there was a certain Way of making a certain Cloth for Apparel, and Houshold-Furniture, far exceeding that of Linen, or of Woollen, in Fineness, Strength, Gloss, and Softness; Men would immediately have fallen to conjecturing about some vegetable Silk; the finer Furs of Animals; or the Feathers and Down of Birds; without ever dreaming it should proceed, in such Plenty, from the anniversary Spinning of a small Worm. And if any one should have but dropp'd a Word about such a Worm, he would certainly have been laugh'd at, as the Projector of a new Spider-Work. *Silk.*

24. So, again, if, before the Use of the *Compass*, any Man had said, that a certain Instrument was known, for exactly discovering the Quarters and Points of the Heavens; Mens Invention would hence presently have run upon a more exact Construction of astronomical Instruments; and various Ways of applying them: but that any thing should be found, whose Motion had such a Correspondence to the heavenly Bodies; and yet the Thing itself be no celestial, but only a bare terrestrial, stony, or metallic Substance; would have seem'd absolutely incredible. Yet these, and the like Particulars have been hid from Mankind for so many Ages; and, at last, were not discover'd by Philosophy, or the rational Arts; but by Chance, or Accident: and are of such a Nature, as to appear perfectly foreign, and remote from the Things known before; so that no previous Notion could any way lead to them. *The Compass.*

25. Whence

[k] See above, *Aph.* 24. more probly 34.

[l] It cannot be too carefully remember'd, that all our Knowledge is in proportion to what we have seen; and not to what is contained in Nature.

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All afford an Argument of Hope.

25. Whence there is great room to expect, that there ſtill remain in the Boſom of Nature, many Things, of excellent Uſe, that have no manner of Relation, or Analogy, to the Things already diſcover'd; but lying perfectly out of the Road of the Imagination [m]; and which, tho' hitherto unknown, may, doubtleſs, thro' numerous Revolutions, and Succeſſions of Ages, be one Time or other diſcover'd; as thoſe abovemention'd have been. But, by the Method we propoſe, they will more readily, and ſuddenly, be repreſented, and anticipated [n], at once [o].

APHORISM CX.

The obvious Invention of Printing, long unknown.

26. There are alſo other Inventions of ſuch a Kind as to ſhew, that Men may paſs by, and overlook, noble Diſcoveries, which lie before their Feet. For tho' the Invention of *Gunpowder*, *Silk*, the *Compaſs*, *Sugar*, *Paper*,

[m] Such as the *Bark*, and other Specifics in Medicine; *Phoſphorus*, *Aqua Fortis*, and *Aqua Regia*, in Chemiſtry; the uſe of *Lead* and *Antimony*, in Refining, *&c.*

[n] That is, be diſcover'd, or at leaſt foreſeen in the Mind; and the Ways of bringing them into uſe diſcern'd; much ſooner, than by waiting the ordinary, or ſlow-paced Courſe of Things; as is ſhewn in the *Second Part*.

[o] The following Aphoriſm, found detached in another Place, may deſerve to be added here.

1. "It may, perhaps, ſeem incredible to many, that there ſhould ſtill remain undiſcover'd "any conſiderable Number of uſeful, and beneficial Works; and, again, ſtranger, that they "ſhould hereafter be diſcover'd, of a ſudden: and great, to be ſure, will be the Wonder, "what theſe particular Works can be. The direct Anſwer is, that as the Ignorance of Mankind has led them into Deſpair; ſo Knowledge will lead them out of it, into the Regions "of Hope, or, rather, of Certainty. But whoever duly conſiders it, will not find it ſtrange, "if our Method of *Interpreting Nature* prevails, that there ſhould, in a ſmall Compaſs of "Time, many new and uſeful Inventions grow up: for the Births of Knowledge are "quick; but the Births of Time are ſlow. And all the noble Inventions at preſent in Uſe, "rather proceeded from Accident, and random Trials, or Conjectures; than from any pre"vious Light of Knowledge: whereas the Method of diſcovering by *Induction* is certain, "regular, and direct; without waiting for accidental Hits, and lucky Chances.

2. "And, that there may ſtill remain new Diſcoveries to be made, at leaſt with regard to "our ſelves, may be fairly argued from hence; that we have no certain Knowledge of all the "Inventions known to former Ages, the different Countries of the World, or to all par"ticular Perſons. And 'tis certain, were it not for Men, we ſhould never have ſeen Multi"tudes of thoſe Things we at preſent enjoy; eſpecially thoſe vulgarly call'd *Productions of Art*; "ſuch as Cloth, Coin, *&c.* And, to conſider it cloſely, Mankind will be found directed by "certain Motions, which they obey in their Diſcoveries. Theſe Motions, indeed, appear ſubtile, "and hard to be diſtinctly comprehended, and underſtood; but are not the leſs certain for "that. And tho', in this Caſe, Men may be ſaid to obey their own Will; that alters not the "Nature of the Thing; for Will, in Man, acts like that call'd Fortune, or Accident, in the "World. Such Things, therefore, as require the Aſſiſtance of Men to produce, and have hi"therto lain quite out of their Road, may be reaſonably expected from this new *Method*, which "was unknown to former Ages. For Men ſometimes ſtumble upon Things, before they are "aware of them; and go in queſt of others, with a certain View; and by ſuch Means as they "know: But the Knowledge of the Means for Diſcovery, has hitherto come by common "Obſervavations, and obvious Experiments; whereas our Method tends to produce ſuch "Works as have neither an obvious Effect, an obvious Operation, nor an obvious Light; "being indeed no other than the *Works of Knowledge*; that are not otherwiſe producible, "than by pure Science, and direct *Interpretation*, neither of them obvious; but removed "infinite Degrees from ſuch Things as are common.

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Paper, &c. may ſeem to depend upon certain Properties of Things, and of Nature; yet, doubtleſs, the Art of *Printing* contains nothing that is not open, and in a manner obvious. But Men not obſerving, that, tho' it were harder to range the Types of Letters, than to draw Letters by the Hand; yet there was this Difference, that the Types of Letters, being once ſet, would ſerve for numerous Impreſſions; whilſt Characters, drawn by the Hand, afforded only a ſingle Writing: or, perhaps, not reflecting that Ink might be ſo thicken'd, as to ſtain without flowing, eſpecially if the Face of the Letter ſtood upwards, and the Impreſſion was ſtruck downwards; the World has, for ſo many Ages, been without this admirable Invention, which ſo nearly concerns the Propagation of Knowledge.

27. And, in this Courſe of Invention, the Mind is frequently ſo perverſe, childiſh, and contradictory, as firſt to diſtruſt, and preſently after to deſpiſe itſelf: for Men firſt conceive it incredible, that any ſuch Diſcovery ſhould be made; but, after it is once made, they again think it incredible, that it was not found out before. And hence we juſtly deduce another Ground of Hope, that there may ſtill remain a large Treaſury of Inventions, deducible not only from the unknown Operations to be hereafter diſcover'd; but alſo from transferring, compounding, and applying thoſe already known; by the Means of what we call *Learned Experience*[p]. *The perverſe Action of the Mind in Inventions.*

APHORISM CXI.

28. As a farther Ground of Expectation, Men may pleaſe to conſider the infinite Expence of Genius, Time, and Treaſure, that has been beſtow'd upon Things, and Studies, of very little Uſe and Value; whilſt, if but a Part thereof were employ'd upon ſound and ſerviceable Matters, every Difficulty might be conquer'd. And this we think proper to mention here, becauſe we muſt confeſs that ſuch a Collection of *Natural* and *Experimental Hiſtory*[q], as we have meaſur'd out in our Mind; and ſuch as really ought to be procured; is a great and royal Work; requiring the Purſe of a Prince, and the Aſſiſtance of a People. *No great Time and Treaſure beſtow'd upon Philoſophy.*

APHORISM CXII.

29. And let no Man ſhrink at the Multitude of Particulars required; but turn this alſo to an Argument of Hope. For the particular *Phænomena* of *Arts and Nature*, are all of them like Sheaves, in Compariſon of the Inventions of Genius, when disjoin'd, and metaphyſically ſeparated from the Evidence of Things. The former Road ſoon ends in an open Plain; whilſt the other has no Iſſue; but proves an infinite *Experience but little proſecuted.*

[p] See *de Augment. Scientiar.* Sect. XII.
[q] See *Vol.* III. *p.* 8—16.

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Labyrinth: for Men have hitherto made little Stay in Experience; but paſs'd lightly over it; and, on the other hand, ſpent infinite Time in Contemplation, and the Inventions of Genius: whereas, if we had any one at our Elbow, who could give real Anſwers to the Queſtions we ſhould put about Nature; the Diſcovery of *Cauſes*, and of all the *Sciences*, would be a Work but of few Years [r].

APHORISM CXIII.

The Author's Example propoſed.

30. We judge alſo, that Mankind may conceive ſome Hopes from our Example: which we offer, not by way of Oſtentation; but becauſe it may be uſeful. If any one, therefore, ſhould deſpair, let him conſider a Man as much employ'd in *Civil Affairs*, as any other of his Age; a Man of no great Share of Health, who muſt therefore have loſt much Time; and yet, in this Undertaking, he is the firſt that leads the Way, unaſſiſted by any Mortal: and ſtedfaſtly entering the true Path, that was abſolutely untrod before; and ſubmitting his Mind to Things; may thus have ſomewhat advanced the Deſign. And after this, let him who deſponds conſider, what may be expected from Men of Leiſure; a Conjunction of Labours; and a Succeſſion of Times; proceeding upon the Notices we have given them: eſpecially as it is in a Way, not open only to certain Perſons; as the *rational Way* is [s]; but where the Labours of all Men, eſpecially in the collecting of Experiments, may be well diſtributed, employed, and afterwards joined together. For then it is that Mankind will begin to know their own Strength; when not infinite Numbers ſhall perform the ſame Things; but ſome execute one Thing, and ſome another.

APHORISM CXIV.

Experiments to be gone upon.

31. Laſtly; altho' a much weaker and fainter Breeze of Hope ſhould breathe from the *New Continent* [t]; yet we muſt abſolutely determine for the *Buſineſs of Experimenting*; unleſs we had rather be quite abject and deſponding. For 'tis not equally dangerous to refuſe trying, and not to ſucceed; becauſe Trial has a Chance of procuring a great Advantage; and Failure, the Chance but of a ſmall Loſs of Labour. To ſum up all; it appears to us, both from what has been ſaid, and what remains unſaid, that there is *Hope* ſufficient, not only for a Man of Courage to try, but alſo for a prudent and ſober Man to believe [u].

APHORISM.

[r] It may here add ſome Weight, to find that general Scholar, *Dan. Geor. Morhof* of Opinion, that the Author himſelf *was equal to the Interpretation of all Nature; if he had not been prevented by Civil Buſineſs.* See *Morhof. Polyhiſt.* Tom. II. p. 381.

[s] See above, *Aph.* 95. See alſo *Vol.* III. *p.* 8–16.

[t] The future Proſpect of improving the Sciences.

[u] But the greateſt Argument with moſt, is good *Succeſs*; which, in this Caſe, has not been wanting; ſo as to encourage a farther Proſecution of this Deſign, upon as juſt Foundations as the Merchant trafficks.

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APHORISM CXV.

32. And thus much, by way of removing *Deſpair*; (which is a principal Cauſe of the ſlow Progreſs of the Sciences;) at the ſame Time, finiſhing what we had to offer concerning the *Signs* and *Cauſes* of Errors; and the prevailing Indolence and Inactivity of Men: for as to the more ſubtile *Cauſes*, which come not under popular Judgment, or Obſervation, they ſhould be referr'd to what we have ſaid above, concerning the *Idols of the Mind*[w]. *Recapitulation.*

33. And here likewiſe muſt end that Part of our INSTAURATION which regards the pulling down of the old Structure; and which is effected by three Kinds of *Confutation*; *viz.* (1.) the Confutation of the *natural Reaſon, when left to itſelf*; (2.) the Confutation of the *Manner of Demonſtrations*; and (3.) the Confutation of the *received Theories*, or *prevailing Philoſophies*, and *Doctrines*. And this latter *Confutation* has been ſuch as it might be; *viz.* derived from *Signs*, and the Evidence of *Cauſes*: for no other Confutation could poſſibly be uſed by us, who differ from all others in Principles and Demonſtrations[x]. *The three Confutations uſed.*

34. It would, therefore, be Time to proceed to our *Rule* and *Art* of *Interpreting Nature*; did not ſomething ſtill lie in the Way, that requires to be removed. For, as we propoſed, by an *Introductory Sett of Aphoriſms*, to prepare the Mind, as well to underſtand, as to receive, what is to follow; having now levell'd and poliſh'd the Mirror; it remains, that we ſet it in a right Poſition, or, as it were, with a benevolent Aſpect, to the Things we ſhall further propoſe. For, in every new Undertaking, not only the being ſtrongly prepoſſeſſed with an inveterate Opinion; but alſo a falſe Notion, or Expectation, of what is to follow, proves ſufficient to give a Prejudice. We muſt, therefore, next endeavour to eſtabliſh a juſt and true Opinion of the Thing we intend; tho' this Opinion be only temporary, and of Uſe but till the Thing itſelf is well underſtood. *The Mind previouſly to be informed of the* Second Part.

[w] See above, *Sect.* II.
[x] See above, *Aph.* 35.

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SECT. VII.

An IDEA *of the* NEW METHOD *of Interpreting* NATURE[a].

APHORISM CXVI.

The Author proposes to found no Sect.

1. WE postulate it of Mankind, that they would not imagine we have any design to form a *Sect in Philosophy*; after the manner of the ancient *Greeks*, or some of the Moderns. This is far from our View. Nor do we judge it material to the Fortunes of Mankind, what abstract Opinions any one entertains of the Nature and Principles of *Things*: no doubt, but many of these may be borrowed from Antiquity; and many new ones be introduced. Thus, for Example, a great Variety of Hypotheses, tho' different among themselves, may well enough solve the *Phænomena* of the heavenly Bodies[b].

Nor regards Opinions.

2. We are not sollicitous about such useless Things, as depend upon Opinion; but, on the contrary, resolve to try whether we can lay any firmer Foundations of the *human Power* and *Greatness*; and enlarge the Bounds thereof. And, altho' we have, as we conceive, discover'd certain Particulars much more just, true, and advantageous, than those, at present in use; and reserve them for the *Fifth* Part of our whole Design[c]; yet we lay down no one entire, or general *Theory*: for the Time of this is not yet come; nor have we any Hopes of living to finish the *Sixth* Part

[a] The Idea given in this Section of the Author's Method of interpreting Nature, is rather a negative than a positive Idea; and formed by excluding what it is not, rather than by directly shewing what it is, which will be the Business of the *Second Part* to unfold. But this Section was necessary, to give some Glimpse of the Thing itself; and prepare the Mind, by degrees, for the great *Light* to be afterwards set up.

[b] Observe, that the most elegant and plausible Solutions of Phænomena, may be far removed from Truth; and that various, contradictory, and yet equally probable Solutions, may be frequently given of the same Appearance. So that to solve Phænomena hypothetically, is a weak and childish Thing in Philosophy; or no better than the Sport of Fancy, and Imagination.

[c] See *Vol.* III. *ad finem*.

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Part of our INSTAURATION; which is deſtined to receive a Philoſophy diſcovered by the genuine *Interpretation of Nature*: but hold it ſufficient to carry ourſelves ſoberly and uſefully, in moderate Things; and, in the mean Time, to ſow the Seeds of pure Truth for Poſterity; and not be wanting, in our Aſſiſtance, to the firſt Beginning of great Things.

APHORISM CXVII.

Promiſes no Works.

3. And, as we are no Founders of a Sect; ſo are we no Promiſers of particular Works. But, here it may be replied, that we, who ſo frequently make mention of *Works*, and refer all Things to them, ſhould alſo give ſome Earneſts of them. But our Deſign, as we have often ſaid, is not to derive *Works* from *Works*, or *Experiments* from *Experiments*, like Empirics; but, like true Interpreters of Nature, from Works and Experiments, to derive *Cauſes* and *Axioms*; and from theſe *Cauſes* and *Axioms*, new *Works* and *Experiments* [d].

The Natural Hiſtory, hitherto collected, unfit for the Purpoſe.

4. And, altho' any one of tolerable Diligence and Perſpicuity, may find in our *Tables of Invention*, which make the fourth Part of our *Inſtauration* [e]; as alſo from the *Examples of Particulars*, produced in the Second Part of the preſent Piece; and again, in our Obſervations upon the *Hiſtory deſcribed in the* Third Part [f]; may, every where, find Indications and Deſigns of numerous noble Works; yet, we ingenuouſly confeſs, that the *Natural Hiſtory* we have hitherto been able to procure, either from Books, or our own Enquiry, is not ſo copious, and ſo well verified, as alone to ſerve for, or even adminiſter to, a genuine *Interpretation of Nature* [g].

No Delay made in the Diſcovery of Works.

5. And therefore, if any one finds himſelf diſpoſed, and fitted for going upon Mechanical Works; and has a Sagacity at diſcovering them, from barely converſing with Experiments; we leave him free, and recommend it to his Induſtry to collect many Particulars from our *Hiſtory* and *Tables*, as it were in Paſſage, and apply them to *Works*; after the manner of Intereſt, for a time, till the Principal may be received [h]. But, as ourſelves endeavour after greater Things; we here condemn all haſty

[d] After the Method of the *Sylva Sylvarum*, *Hiſtory of Life and Death*, *Winds*, &c. when the Deſign of each ſeparate Enquiry is to diſcover *Axioms*, *Cauſes*, or *Rules of Practice*, for producing Works, in the way of a lively, active, and practical Philoſophy.

[e] See *Vol.* III. *p.* 313—327.

[f] *Viz.* The *Sylva Sylvarum*.

[g] This ſeems no way ſpoke out of Modeſty; but as the real Truth: whence the principal Thing, in order to a juſt and full *Interpretation of Nature*, is to procure an extenſive and faithful *Hiſtory* of *Nature* and *Art*.

[h] It is no difficult Matter, from the *Tables*, larger *Obſervations*, improvable *Axioms*, and variable *Canons*, that occur in the Author's ſeveral Pieces, to draw out Models and Patterns of conſiderable Works; or new practical Arts, of Importance: only, as Philoſophy is hitherto very imperfect; theſe Models will ſcarce be perfect in the firſt Eſſays; but may require many Amendments, before they will anſwer. Whereas, in the Author's Manner of Proceeding, it would be eaſy to form a juſt Notion of the Thing deſigned; and then directly put it in Practice; without Danger of miſcarrying. But there are few that ſeem to apprehend the Practicability hereof.

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haſty and unſeaſonable Stops; as being like the ſtopping of *Atalanta*; (a Compariſon we frequently uſe:) for we do not childiſhly affect *golden Fruit*; but place the Streſs of the whole Courſe, upon the Victory of *Art* over *Nature*. And we are not ſo eager, as to reap Moſs for Corn; or the tender Blade for Ears; but wait, with Patience, the ripeneſs of the *Harveſt* [l].

APHORISM CXVIII.

Suppoſing falſe Facts in a Natural Hiſtory.

6. And ſome, without doubt, upon reading our *Hiſtory* and *Tables of Invention*, will meet with Experiments not well verified, or even abſolutely falſe; and may thence, perhaps, be apt to ſuſpect, that our Inventions are built upon doubtful Principles, and erroneous Foundations. But this is nothing: for ſuch Slips muſt neceſſarily happen in the Beginning. 'Tis but as if here and there a Letter ſhould be miſplaced, or miſtaken, in a Writing, or printed Book; which does not, uſually, much interrupt the Reader: as ſuch Errors are eaſily corrected, from the Senſe of the Place. In the ſame manner, let Men obſerve, that Experiments may be falſly believed, and received in *Natural Hiſtory*; and yet ſoon after be expunged and rejected, when *Cauſes* and *Axioms* are diſcovered [k]. Tho', 'tis true, that if there ſhall be many, and frequent, and continued Errors, in a *Natural* and *Experimental Hiſtory*, they cannot be corrected by any Felicity of Art or Genius: and therefore, if in our *Natural Hiſtory*, which is collected, and examined, with ſo much Diligence, ſo rigorous, and, as it it were, with ſo religious a Severity, there ſhould ſometimes happen any Falſity, or Miſtake, with regard to Particulars; what muſt be thought of the *common Natural Hiſtory*, which, in compariſon of ours, is ſo negligent and remiſs; or, what of the *Philoſophy*, and the *Sciences*, built upon ſuch Quickſands [l]? Let no one, therefore, be concerned, if our Hiſtory has its Errors.

APHORISM CXIX.

Trite and vulgar Particulars.

7. There will alſo occur, in our *Hiſtory* and *Experiments*, many Things that appear at firſt Sight; (1.) trifling and vulgar; (2.) filthy, ſordid, and unpolite; (3.) too ſubtile, and merely ſpeculative, or, as if it were uſeleſs:

[l] See the Fable of *Atalanta* explained, in the *Sapientia Veterum*.

[k] It muſt be carefully obſerved, that even a large Number of Errors, or Falſities, in a *Natural Hiſtory*, deſigned for the Foundation of *Philoſophy*, would not render it uſeleſs for the Purpoſe; unleſs the Number of Errors ſhould exceed the Number of Truths, it contained: for in that Caſe, indeed, the *Cauſes*, here mention'd, would be wrong aſſigned; and the *Axioms* erroneous. But this cannot happen, where more Truth than Falſity prevails; and a few *Cauſes* and *Axioms*, diſcover'd and form'd, tho' but with tolerable Exactneſs, may diſcover the Depravity, or Errors, of particular Facts and Experiments. This will appear plainer in the *Second Part* of the preſent Work.

[l] The Caſe requires no more than *Argumenta ad Hominem*. See the *Preface* to *Vol.* III.

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leſs: which may diſguſt, and alienate the Minds of Men, from conſidering them[m].

8. (1.) But, as for what our Hiſtory may contain of *Vulgar*; let Men reflect, that they hitherto, uſually, do little more than refer and accommodate the *Cauſes* of ſuch Things as are rare, to ſuch as are more common; without ſearching for the *Cauſes* of thoſe that frequently happen; but only receive them as granted and allowed.

9. Thus they ſeek not the Cauſes of Gravity, of the Celeſtial Motions, of Heat, Cold, Light, Hardneſs, Softneſs, Rarity, Denſity, Fluidity, Conſiſtence, Animation, Inanimation, Similarity, Diſſimilarity, Organization, *&c.* but diſcourſe and judge of theſe, as of Things evident, manifeſt and received; and thence of others, which occur leſs frequently, and familiarly.

10. But, as we are well apprized, that no Judgment can be made of uncommon and remarkable Things; much leſs that any new ones ſhould be brought to Light; unleſs the *Cauſes*, and the *Cauſes of the Cauſes* of common Things, are juſtly examined and diſcovered; we are neceſſarily obliged to receive the commoneſt Things of all, into our Hiſtory. And, indeed, we find nothing proves more prejudicial to *Philoſophy*, than that ſuch Things as are obvious, and often occur, ſhould not arreſt and detain the Conſideration of Mankind; but are only received tranſiently, without enquiring into their *Cauſes*: whence *Information is not ſo frequently wanted in Things unknown; as Attention in ſuch as are known.*

APHORISM CXX.

11. (2.) But for unpolite, or even ſordid Particulars[n], which, as *Pliny* obſerves, require an Apology for being mentioned; even theſe ought to be received into a *Natural Hiſtory*, no leſs than the moſt rich and delicate: for *Natural Hiſtory* is not defiled by them, any more than the Sun, by ſhining alike upon the Palace and the Privy. And we do not endeavour to build a Capitol, or erect a Pyramid, to the Glory of Mankind; but to found a Temple, in Imitation of the World, and conſecrate it to the Human Underſtanding: ſo that we muſt frame our Model accordingly. For whatever is worthy of Exiſtence, is worthy of our Knowledge, which is the Image of Exiſtence: but ignoble Things exiſt, as well as the noble. Nay, as ſome excrementitious Matters, for Example, Musk, Civet, *&c.* ſometimes produce excellent Odours; ſo ſordid Inſtances ſometimes afford great Light and Information[o]. But enough of this; as ſuch a Delicacy is perfectly childiſh and effeminate. *Such as are diſagreeable.*

APHORISM

[m] Let this be underſtood of Objections made to the Author's *Sylva Sylvarum.*

[n] Such, for Example, as Obſervations and Experiments upon Putrefaction, the Excrements of Animals, *&c.*

[o] The Reader of the *Sylva Sylvarum*, *&c.* will find many Things of this Kind, that here ſeem at once ſufficiently apologized for.

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APHORISM CXXI.

Too curious, or subtile.

12. (3.) It deſerves a much cloſer Conſideration, that many Particulars in our *Natural Hiſtory* will, to an ordinary Capacity, or even to any Mind accuſtomed only to the preſent Philoſophy, appear like certain laboured, uſeleſs Subtilties: and therefore, this Objection deſerves a primary Regard. We have already obſerved, that at the Beginning, and for a Time, we ſeek Experiments that may afford Light, not Profit: in Imitation of the Creator, who, as we muſt often repeat, produced nothing but Light for the firſt Day's Work.

13. And to pretend that theſe ſubtile Things are Uſeleſs, ſeems like imagining, that Light has no Uſe; becauſe it is not a ſolid, or tangible Body. And, in reality, the Knowledge of ſimple Natures[p], well examined and defined, is like Light; and illuminates all the dark Receſſes of Works: and tho of no great Uſe in itſelf, yet potentially includes, and draws after it, whole Troops and Armies of *Works*, and Fountains of the nobleſt *Axioms*[q]. So the Letters of the Alphabet ſeparately, and of themſelves, are inſignificative and uſeleſs; yet prove like firſt Matter in the Formation, or Compoſition, of all Speech and Diſcourſe. Even the Seeds of Things, tho' of ſuch great Efficacy, are uſeleſs, without the proper Treatment; and the ſcattered Rays of Light itſelf, unleſs brought cloſe together, do not impart their Virtue.

14. But if any one is offended at *Speculative Subtilties*; what would he ſay to the Schoolmen, who have given into Subtilties without End? And yet theſe Subtilties were about Words, or at leaſt *vulgar Notions*, which comes to the ſame Thing; and not about Nature; and have proved alſo as uſeleſs in their Conſequence, as in their Origin; being not of that Kind, to be uſeleſs for the preſent, but infinitely uſeful in future; as thoſe are whereof we now ſpeak. And Mankind may be certain of this, that all Subtilty of Diſpute, and Reaſoning of the Mind, if uſed only after *Axioms* are diſcovered, comes too late, and out of Seaſon; and that the true, proper, or at leaſt the principal Time for Subtilty, is in contemplating Experience, and forming *Axioms* from it[r]: for that other Kind of Subtilty catches at Nature, without ever taking hold of her. And what is uſually ſaid of Opportunity, or Fortune, holds perfectly true, if tranſferred to Nature; *viz.* that *ſhe has Locks before, but none behind.*

15. Laſtly;

[p] Such as Heat, Cold, Gravity, Fluidity, *&c.*

[q] See *Vol.* I. *p.* 84.

[r] This alone is what properly deſerves the Name of *Theory* in Philoſophy; that is, the viewing, or conſidering in the Mind, how Things are in Nature: and thence forming *Axioms*, or *Rules of Practice*, for producing Works and Effects. For want of attending to this fundamental Point; Men are apt to imagine, that *Philoſophy* is a light, airy Thing, wherein every one may amuſe himſelf, by raiſing Hypotheſes, and building Syſtems, without the Drudgery of conſulting Nature, and Experience. But let it be well remember'd, that the *End of Philoſophy, is Practice*; or, that Philoſophy is no farther of Uſe, than as it may be made operative.

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15. Laſtly; with relation to this Contempt of *Natural Hiſtory*, on account of its containing Things that are vulgar, ignoble, ſubtile, or uſeleſs in their Origins, we ſhould here conſider, as an Oracle, the Saying of the poor Woman to the haughty Prince, who rejected her Petition, as a thing below his Dignity to take notice of; *Then ceaſe to Reign*: for, 'tis certain, that whoever will not attend to Matters of this Kind, as if they were too minute or trifling, ſhall never obtain Command or Rule over Nature[s].

APHORISM CXXII.

16. It may alſo ſeem a ſtrange and ſhocking Thing, that we ſhould at once reject all the Sciences, and all Authors, at a Stroke; without admitting any one of the Ancients to aſſiſt, or defend us; but truſt, as it were, to our own ſingle Strength. *The Objection of rejecting the Ancients, and all the Sciences.*

17. We are well aware, that if we were any way diſpoſed to act inſincerely, it would not be difficult for us to attribute what we produce, either to the early Ages[t], (when, perhaps, the Knowledge of Nature flouriſhed more, tho' with leſs Pomp, than after it came into the Flutes and Trumpets of the *Greeks*,) or, even in certain Particulars, to ſome of the *Greeks* themſelves; and thence derive Authority and Honour to our Inventions; after the manner of new raiſed Perſons, who fetch their Nobility from ſome ancient Line, by the favour of Genealogies and Deſcents. But relying wholly upon the Evidence of Things, we reject all *Stratagem* and *Impoſture*[u]; and judge it of no greater Moment to the Buſineſs in hand, whether what ſhall be now diſcovered was known to the Ancients, and by the Viciſſitude of Things, and Ages, is made to ſet and riſe; than to be ſollicitous, whether *America* is the Iſland *Atlantis*, mentioned by *Plato*, and known to the Ancients; or whether *Anſwer'd, as to rejecting Antiquity.*

[s] This whole *Aphoriſm* will, if duly conſider'd, appear ſelf-evident. If any farther Illuſtration be required, ſee *Vol.* III. *p.* 8—16.

[t] This might have been an eaſy Artifice for the Author; conſidering how well verſed he was in Antiquity; and what a Talent he had at explaining the *Mythology* thereof: but this would, indeed, have been an Impoſition, or Impoſture; ſince no evident Signs of any ſuch Inductive Method, as that he propoſes, are found in the Ancients. But tho' the Author does not uſe this *Artifice*; 'tis certain he has uſed a *particular Art*, in procuring *Credit* and *Reputation* to his Inventions. But what kind of *Art* this is, deſerves, perhaps, like the Art of Government, to be in ſome meaſure concealed. Certainly the Subtilty of the Serpent, may be joined with the Innocence of the Dove. See hereafter, *Aph.* 128.

[u] In another Place, the Author mentions, that if he were diſpoſed to deal colluſively with Mankind; it would be no difficult Matter to perſuade them, that the ancient Philoſophers, long before the Times of the *Greeks*, had a much deeper Knowledge of Nature; and thence artificially inſinuate, that they proſecuted Enquiries in the Method himſelf propoſes: whence he imagines he might have gained over to his Side, all the *Admirers of Antiquity*; or thoſe who reſt upon Authorities; which are a large Number; and thus have found the leſs Oppoſition in his promoting his grand Deſign. But tho' himſelf apppears to have conceived highly of the *Knowledge of the earlieſt Ages of the World*; as we find by his Piece *de Sapientia Veterum*; yet he rejects this Artifice as diſhoneſt.

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it were firſt diſcovered by *Columbus:* for the *Diſcovery of Things, is to be derived from the Light of Nature; and not from the Darkneſs of Antiquity*[w].

All Authors and the Sciences.

18. But as to the general Cenſure, of ſtriking out all Authorities and all the Sciences, at once; certainly, whoever conſiders it rightly, will find this Procedure more rational, and more modeſt, than to have done the Thing but in part. For if Errors had not been rooted in Mens firſt Notions; ſome Things, juſtly diſcovered, might have rectified others: but as Errors have been fundamental; and of ſuch a Kind, that Men have rather neglected and paſſed Things over, than form'd a wrong or falſe Judgment about them; 'tis no wonder if they have not obtained what they never had in view; not arrived at the End they never propoſed; nor performed the Courſe which they never entered[x].

The Accuſation of Inſolence, anſwer'd.

19. And as to the Point of *Inſolence*; 'tis true, that if one Man ſhould, by the Steadineſs of his Hand, and the Strength of his Eye, pretend to draw a more perfect Right Line, or Circle, than another, there would then be a Competition in Excellence; but for a Man to aſſert, that by the Ruler, or Compaſs, he can draw a more perfect Line, or Circle, than another by the ſole Uſe of his Hand and Eye, is ſurely no great matter of Oſtentation. And this holds good, not only in our preſent, firſt Attempt; but regards thoſe alſo who ſhall endeavour to improve it after us: for our *Way of Diſcovering the Sciences*, almoſt levels the Capacities of Men; and leaves little room for Excellence; as it performs all Things by ſure Rules and Demonſtrations: and therefore, theſe Diſcoveries of ours, are, as we have often ſaid, rather owing to *Felicity*, than any great *Talent*; and are rather the Production of *Time*, than of *Genius*. For there is, doubtleſs, no leſs of Accident in the Thoughts, than in the Works and Actions of Men.

APHORISM CXXIII.

The Reaſon of the Author's differing from others.

20. And therefore we may ſay of our ſelves, what was formerly ſaid in the way of Pleaſantry; that *'tis impoſſible thoſe who drink Water, ſhould have the ſame Sentiments with thoſe that drink Wine*[y]. For all Mankind, both Ancients and Moderns, have drank a crude Liquor in the Sciences; as

[w] Notwithſtanding the high Opinion which the Author entertain'd of *Antiquity*, he tells us in another Place, that, after having examined all the Sects of Philoſophy among the *Greeks*, and other Nations; he turn'd his Eyes upon early Antiquity; which he found as a remote Tract, cover'd with Clouds, and hid in Obſcurity.

[x] This Sentiment is differently expreſſed in another Place; thus. "As to the Rejection of "former Doctrines, this muſt be underſtood only of Opinions; and not as derogating from the "Genius, or Labours, of the Authors that have gone before us. For the greater Genius any "Man has, and the more Pains he takes, after having left the Light and Hiſtory of Nature, "and the Evidence of Particulars; into the more dark and intricate Dens and Dungeons of Fi-"ctions, and Idols, he runs, and becomes involved.

[y] The Saying of *Philocrates*, when he differ'd from *Demoſthenes*; viz. *Do not wonder*, Athenians, *that I differ from* Demoſthenes: *for he drinks Water, and I drink Wine.*

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as a Water that either flowed ſpontaneouſly from the Underſtanding; or was drawn out of the Well, by the Wheels of Logic: whilſt we drink a Liquor, and offer it to others, prepared from an infinite Number of Grapes, ripe and ſeaſonably gathered, in Cluſters; ſomewhat ſqueezed in the Preſs; and, laſtly, purged and clarified in the Veſſel[z]. Whence 'tis no wonder if we differ from others.

APHORISM CXXIV.

21. It will alſo, doubtleſs, be obſerved of us, that our ſelves have not propoſed the true, and beſt End, or Scope of the Sciences; (the Thing we cenſure in others;) as the Contemplation of Truth is of greater Dignity and Sublimity, than all Utility, and Greatneſs of Works; whilſt the long and ſollicitous dwelling in Matter, Experience, and the Uncertainty of Particulars, which we recommend, fixes the Mind to Earth; or rather ſinks it into an Abyſs of Confuſion and Perturbation: at the ſame Time, driving and keeping it aloof from the Serenity and Tranquillity of a much diviner State, that of *abſtract Wiſdom.* *The Objection, that the preſent Deſign draws away from the abſtract Contemplation of Truth.*

22. We willingly allow the Force of this Argument; and above all Things, endeavour after what it intimates and requires. For we would place a true Model of the World in the *human Underſtanding*, ſuch as the World is found to be; and not ſuch as any ones Reaſon might make it. And this cannot be done, without firſt very carefully diſſecting and anatomizing the World. But for thoſe ridiculous and Mock-models of Worlds, which the Fancies of Men have formed in Philoſophies, we reject them abſolutely[a]: and therefore, let Men well conſider, and underſtand, the *difference there is between the Idols of the human Mind, and the Ideas of the divine Mind*; the former being no more than arbitrary Abſtractions; but the other, the true Signatures of the Creator upon the Creatures, as impreſſed and limited in Matter, by true and exact Lines[b]. And therefore, *Truth* and *Utility*, are here the very *Anſwer'd.*

[z] The Allegory is not difficult to interpret. The ſpontaneous Water of the Underſtanding, is the natural, unaſſiſted human Reaſon; in the ordinary Way of exerciſing its Talent. The Water drawn by the Wheels of Logic, is chiefly ſuch Doctrine as we find in *Ariſtotle*, his Commentators, and Followers; but the Wine of the Author, is the Knowledge gained from a large Number of attentive Obſervations made upon Nature; and a Variety of careful Experiments; or a *Sylva* of Matter, collected with Choice, and Judgment; ruminated upon in the Mind, and ſomewhat digeſted, and formed into *Axioms*, and *Rules of Practice.*

[a] Such, ſuppoſe, as the Categorical World of *Ariſtotle*, the World of *Epicurus*, the *Platonical* World, and, of later Date, the *Carteſian* World, *&c.* almoſt every Philoſopher pretending to model the World in his own manner; or to ſhew, if he had been the Creator, how wiſely he would have made it. But to find out what the World is in itſelf, as the Author of Nature has made it, is the Thing here propoſed.

[b] *Viz.* Things themſelves, with their Differences, Relations, Dependencies, *&c.*

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Things required: and Works ſhould be more eſteemed, as they are Pledges of Truth, than as they are Uſeful in Life [c].

APHORISM CXXV.

That, after all, ſome former Philoſophies may be fallen upon.

23. It may, perhaps, be likewiſe objected, that we are only doing what has been done before; that the Ancients proceeded in the ſame Way that we do; and, and therefore, that we ſhall probably, after all this Struggle and Striving, but at length come to ſome one or other of thoſe Philoſophies, which prevail'd among the Ancients: for, that they, in the Beginnings of their Contemplations, procured a large Stock of Examples and Particulars; digeſted them into Regiſters, Common-place Books, and Titles; and thence compoſed their Philoſophies, and their Arts; thus pronouncing upon full Diſcovery: that they added Examples occaſionally, by way of Confirmation, and as a Help to Inſtruction; but thought it needleſs, and burthenſome, to publiſh their Notes, Memoirs, and Common-place Books of Particulars; herein following the Example of Builders, who, after they have erected an Edifice, take down the Ladders and the Scaffolding, and remove them from Sight.

Anſwer'd.

24. It is true, one cannot eaſily believe that the Ancients ſhould have proceeded otherwiſe: but unleſs we forget what has been above delivered, this Objection, or Scruple, is eaſily removed. For, we confeſs, that the Ancients had a *Form of Enquiry* and *Diſcovery*; and their Writings ſhew it: but this Form, was no other than flying from certain *particular Examples*, with the Aſſiſtance of common Notions, (and, perhaps, ſome favourite Part of the received Opinions,) to the moſt general *Concluſions*, or *Principles of the Sciences*; from the fixed and undiſturbed Truth whereof, they drew out, and proved *inferior Concluſions*, by *intermediate Propoſitions*; and built their Arts of theſe Materials: and if new Particulars, and Examples aroſe, or were produced, to oppoſe their eſtabliſhed Doctrine;

[c] Obſerve, that Works, in the Author's Senſe, being derived from a Knowledge of Nature; are Proofs that Nature is underſtood, ſo far as regards the Work effected: For Works cannot be performed, without knowing how to perform them. And tho' this be a valuable Fruit of Knowledge, yet it is not the only one; but the Contemplation of the Truth, hereby confirmed to the Mind, raiſes in it that Veneration, which is due to the Author of Nature; and wherein the Perfection of the human Intellect ſeems to conſiſt. To this Purpoſe, the Author adds, in another Place: If any one, delighted with the Love and Veneration of Contemplation, ſhould think the frequent and honourable mention we made of Works, ſounds harſh and diſagreeable; let him aſſure himſelf, that he acts contrary to his own Deſires; for in Nature, Works are not only beneficial to Life, but the Token of Truth. And as it is juſtly required in Religion, that Faith ſhould be demonſtrated by Works; ſo it is congruous in Natural Philoſophy, that Knowledge alſo ſhould be ſhewn, and demonſtrated by Works: For Truth is more manifeſted and confirm'd by the Indication of Works, than by Arguments; or even than by Senſe. So that *the State and Condition of Men is improved by the very ſame Means that improve the Mind.* We, therefore, judge, that what we have ſaid of the Dignity and Excellence of Works, and the End in View, is not equal to, but comes far ſhort of the Truth. See *Aph.* 129. §. 33.

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Doctrine; they either made them ſquare, by ſubtile Diſtinctions, or accommodated Explanations of their own Rules; or elſe, in a groſs manner, ſtruck them out by Exceptions: at the ſame Time, laboriouſly and obſtinately wreſting, and fitting the more tractable Particulars to their own Principles. We muſt add, that neither their *Natural Hiſtory*, nor *Experience*, was any way ſuch as the Caſe required; and that their Method of bounding at once to the moſt *general Concluſions*, was the Bane of Philoſophy[d].

APHORISM CXXVI.

The Charge of Scepticiſm.

24. It may alſo be objected, that as we diſallow a Liberty of Pronouncing, and laying down ſure Principles, till, by intermediate Steps, we ſhall have regularly come to the moſt univerſal Concluſions; we patronize a Suſpenſion of the Judgment, and bring all to a State of Scepticiſm. The Truth is, we intend and propoſe, not the Art of Doubting, in general; but the *Art of Doubting, properly:* for we do not detract from, but adminiſter to the Senſe; and do not deſpiſe, but regulate the Underſtanding. And 'tis better to know ſo much as is neceſſary, and yet not think ourſelves to know all; than to think that we know all, and yet remain ignorant of that which is neceſſary[e].

Anſwer'd.

APHORISM CXXVII.

That the preſent Deſign regards the Whole of Philoſophy.

25. It may likewiſe be doubted, whether we ſpeak only of perfecting *Natural Philoſophy*, in our manner; or of the other Sciences alſo; as *Logic*, *Ethics*, *Politics*, &c. Our Anſwer is, that what we here deliver regards them all. And as the common *Logic*, which governs Things by *Syllogiſm*, belongs not only to the natural Sciences, but to all; ſo our *new Logic*, which proceeds by Induction, comprehends every Thing. For we deſign and draw up *Hiſtories*, and *Tables of Invention*, (1.) for the Paſſions of *Anger*, *Fear*, *Modeſty*, and the like; (2.) for Models of Government and Civil Affairs; and, (3.) for the mental Actions of the Memory, Compoſition, Diviſion, Judgment, &c. (4.) for Heat, Cold, Light, Vegetation, &c. But as our *Method of Interpretation*, after our *Hiſtory* ſhall be once procured, and prepared, does not, like the *common Logic*, regard only the Motions and Reaſonings of the Mind, but likewiſe the Nature of Things; ſo we conduct the Mind, in ſuch a manner, as that it may, in every reſpect, properly apply itſelf to the Nature of Things: and therefore ſhall deliver many different Precepts, in the *Doctrine of Interpretation*, which may, in ſome Meaſure, relate to the Quality and Condition of the Subject enquired into, and the Manner of *Invention*[f].

APHORISM

[d] See above *Sect.* I. and II. *paſſim.*

[e] See the *de Augment. Scientiar.* p. 118.

[f] A conſiderable Part of this Direction comes in the *Second Part* of the preſent Work. And that the Author extended his View, and fitted his new Logic, to the Purpoſes not only of Phyſics,

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APHORISM CXXVIII.

The Deſign, not to aboliſh the preſent Arts and Sciences.

26. But no one, ſure, can ſuſpect, that we deſire to deſtroy and demoliſh the *Philoſophy*, the *Arts*, and the *Sciences*, at preſent in Uſe; for, on the contrary, we embrace their Uſe, and willingly pay them all due Honour and Obſervance. And, indeed, we would no ways hinder them from being uſed in maintaining Diſputes, adorning Diſcourſes, and ſerving in the profeſſory Offices, and ſhort Methods of acting in Civil Life; or, again, from being received, like Coin, by the common Conſent of Mankind. For we openly declare, that the Things we offer, are not very conducive to theſe Purpoſes; as they cannot be brought down to vulgar Capacities, otherwiſe than by Effects and Works. And how ſincerely we profeſs this Affection and Good-will towards the *Sciences* already received, our former *Attempt for their Advancement*, may ſave us the Trouble of repeating. But this we firmly and expreſly aver, that by the Methods now in Uſe, no great Progreſs can be made in the contemplative and doctrinal Sciences [g]; nor they poſſibly be employ'd for the enlarging and extending of Works [h].

APHORISM

fics, but univerſal Philoſophy, and the whole Body of Arts and Sciences, appears from his *de Augmentis Scientiarum*, and *Sylva Sylvarum*; as well as from the preſent Piece, and the particular Enquiries himſelf has begun; ſuch as the *Hiſtory of Life and Death*, the *Hiſtory of Winds*, the *Hiſtory of Aſtronomy*, the *Hiſtory of Philoſophy*, the *Hiſtory of Authors*, *Diſcourſes of War*, *Government*, *Morality*, *Oeconomy*, &c. So that the Method of working by *Tables* and *Induction*, ſeems excellently fitted for the due and commodious Proſecution of all Kinds of Enquiries.

[g] See *Vol.* I. *p.* 10—16. *& alibi paſſim.*

[h] This ſeems the proper Place wherein to inſert, and preſerve, a few *Aphoriſms*, belonging to the preſent Subject, that were found ſcatter'd in other Parts of the Author's Works.

1. "But if any one ſhall think it needleſs in us, to beſtow ſo much Pains and Diligence, in "preparing the Minds of Men; or imagine, that we do it, in ſome meaſure, to ſhew our "Parts and Learning; and, therefore, had rather, without all Circumlocution, and preparatory Diſcourſe, be told the Thing itſelf, directly, in few Words: We anſwer, that we "could wiſh, for the Good of Mankind, this were the Caſe; or that it were as eaſy to ſurmount the Difficulties, and remove the Impediments in our Way, as it is for us to lay aſide "empty Pride, and Oſtentation. But we deſire Mankind ſhould know, that we have had "ſome Experience of the Way, in this great Solitude we are entering; as the Subject we have "now in hand abſolutely requires we ſhould; and that we would by no means expoſe or betray "ſuch a Subject, thro' a Want of Skill to treat and deliver it. We muſt, therefore, aſſure "them, from a thorough Conſideration and Inſight both of Things, and the Minds of "Men, that we find it almoſt harder to gain Acceſs to the Mind, than to Things; and "that we find the Labour and Difficulty of *Delivering*, not much leſs than of *Diſcovering*. So "that we are here obliged to practice, what is almoſt a new Thing in intellectual Matters, "Complaiſance, or Courtſhip; and at once to bear the Load, not only of our own Thoughts, "but thoſe of other Men. For the only way of ſubverting the *Idols* of Vanity, is by approaching them obſequiouſly; and not by ruſhing in upon them with Violence, and "Fury.

2. "And this does not wholly happen from hence, that Men are captivated with the Admiration of Authors; or ſwollen with their own Conceits; or becauſe, thro' Cuſtom, and Prejudice, they will not be impartial: for, tho' a Man would very gladly impoſe a juſt and "even.

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APHORISM CXXIX.

27. It remains, that we ſay ſomething to the Excellency of the End in View; which, if ſaid before, might have ſeemed no more than a good Wiſh: but now, when the Grounds of Hope are laid, and unjuſt Prejudices removed, it may, perhaps, have greater Weight. If, indeed, we had perfected the whole Deſign; and did not deſire others to ſhare the Labour with us; we wou'd have dropp'd every thing of

The Excellence of the End in View.

" even Temper upon himſelf; and, as it were, forſwear all Prejudice; yet even ſuch a Diſpoſition of Mind cannot be truſted. For *no Man has a Command over his own Underſtanding, which depends not upon his Will: Nor is the Spirit of the Philoſophers, any more than the Spirit of the Prophets, ſubject to thoſe it reigns in.* 'Tis not, therefore, the *Equity*, the *Sincerity*, or the *Facility*, of other Men; but our own Conduct, Diſcretion, and Condeſcenſion, that muſt ſecure us in our Undertaking, and render it ſucceſsful.

3. " And here, again, we lie under no ſmall Difficulty, on account of our own natural Temper and Manners; for it is an irrevocable Decree with us, ever to retain our native Candor and Simplicity; and not attempt a Paſſage to Truth under the Conduct of Vanity; but ſo to moderate and behave our ſelves, as not by any Artifice, Craft, Cunning, Impoſition, Impoſture, or any thing like Impoſture; but barely by the Ornament of Order; and by diligently engrafting new Diſcoveries upon the ſoundeſt Part of the old ones; to work our Way, and effect our Deſign. So far, therefore, from labouring this Point too much, that we rather judge we have beſtow'd leſs Pains and Diligence in preparing Mens Minds, and conquering ſuch great Difficulties, than the Nature of the Deſign requires.

4. " 'Tis obſervable, that moſt Men, in *Delivering* or *Concealing* their Knowledge, do not deal ſincerely; or as the Nature of the Thing demands. And tho' the Crime may be leſs, yet the Miſchief is the ſame, in thoſe who are of ſound Morals, and approved Candor; but want Prudence, or the Art and Method of delivering the Things in their juſt Order. Yet this unfair, ungenerous, or unskilful Manner of delivering the Sciences, is not greatly to be complain'd of; as ſuch Writers have not, by their Way of Delivering, broke the Force of the Things they deliver: for a perverſe Way of Teaching is juſtly preſerved, where only Trifles are taught. But, as our Deſign is not to deliver the Fictions of our own Fancy, the Sport of Words, a Mixture of Philoſophy and Religion, nor certain popular Obſervations, or conſiderable Experiments, work'd up into fabulous Theories; but *real Nature*, with all her Fruits about her; we ſhould think it a betraying of our Truſt, to infect ſuch a Subject, either with an ambitious, an ignorant, or any other faulty manner of treating it. Our utmoſt Study is, therefore, bent upon a juſt and proper Method of delivering our ſelves.

5. " Many will, doubtleſs, be inquiſitive to know, what this juſt and proper Method is; and require it to be told them naked and artleſs, without any Preamble; that they may exerciſe their own Judgments upon it: and we wiſh, indeed, Matters were ſo well with them, that we might gratify their Requeſt. But the *Truth* is, the Minds of Men have the Ways and Paſſages up to them, ſo thick beſet, and obſtructed with ſuch dark, deep rooted, and inveterate *Idols*, as in no wiſe to be ſoon cleared, laid level, and poliſh'd, to receive the true and native Images of Things. Whence we are obliged to uſe our utmoſt Addreſs, to inſinuate and ſlide into theſe dark and thick Coverts. For as Lunaticks are only to be cured by Art, and proper Applications; but are rather made worſe by Force, Oppoſition, and rough Uſage; the ſame Courſe are we obliged to take, and uſe *a gentle Method in the Cure of this univerſal Madneſs*. And here we, ſurely, have a hard Task; to deliver Science ſo innocently, as to give no Occaſion of Error and Offence; yet with ſuch a native and implanted Force, as may procure Credit, guard againſt the Injuries of Time, and deliver Knowledge down to Poſterity; like a vigorous and lively Plant, that may daily grow and increaſe; whilſt, at the ſame time, we ſingle out for our ſelves, and, as it were, adopt a rightly diſpoſed and legitimate Race of Readers. But whether we have done all this, muſt be left to the Judgment of Poſterity.

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of this Kind; leſt it ſhould be taken for publiſhing our own Merit: but as an Edge muſt be given to the Induſtry of others; and their Minds be excited and raiſed; 'tis proper we ſhould here admoniſh Mankind of a few Particulars.

The Honour of Inventors.

28. And, firſt; the Introduction of noble Inventions ſeems to hold, by far, the moſt excellent Place among all human Actions. And this was the Judgment of Antiquity; which attributed *divine Honours to Inventors*; but conferr'd only *heroical Honours* upon thoſe who deſerved well in *Civil Affairs*; ſuch as the Founders of Empires, Legiſlators, and Deliverers of their Country. And whoever rightly conſiders it, will find this a judicious Cuſtom in former Ages; ſince the *Benefits of Inventors* may extend to all Mankind; but *Civil Benefits* only to particular Countries, or Seats of Men: and theſe Civil Benefits ſeldom deſcend to more than a few Ages; whereas, Inventions are perpetuated through the Courſe of Time. Beſides, a State is ſeldom amended in its Civil Affairs, without Force and Perturbation; whilſt Inventions ſpread their Advantage, without doing Injury, or cauſing Diſturbance.

29. Diſcoveries, alſo, are like new Creations, and Imitations of the divine Works. And, 'tis obſervable of *Solomon*, that he fixed not his Glory in any of the Privileges of Royalty, or other Excellencies, whereof he was poſſeſſed; but in this ſingle Buſineſs of *Invention*. *'Tis the Glory of God*, ſays he, *to conceal a Thing; and the Glory of the King to find it out.*

30. Again; Let any one conſider, what a Difference there is betwixt the Life led in any polite Province of *Europe*, and in the ſavage and barbarous Parts of the *Weſt-Indies*; and he will find it ſo great, that one Man may deſervedly ſeem a God, to another; not only on account of greater Helps and Advantages; but alſo upon a Compariſon of the two Conditions: and this Difference is not owing to the Soil, the Air, or bodily Conſtitution; but to Arts.

The Efficacy of Inventions.

31. Again; It may not be improper to obſerve the *Power*, the *Efficacy*, and the *Conſequences* of *Inventions*; which appear no where plainer, than in thoſe three Particulars, unknown to the Ancients; and whoſe Origins, tho' modern, are obſcure and inglorious; *viz.* the Art of *Printing*, *Gunpowder*, and the *Compaſs*; which have altered the State of the World, and given it a new Face; (1.) with regard to *Learning*; (2.) with regard to *War*; and (3.) with regard to *Navigation*: Whence, numberleſs Viciſſitudes of Things have enſued; inſomuch that no *Empire*, no *Sect*, no *Celeſtial Body*, could ſeem to have a greater Efficacy, and, as it were, Influence over human Affairs, than theſe three *Mechanical Inventions* have had.

Three Kinds of Ambition.

32. Again; It may not be amiſs to diſtinguiſh three Kinds, and, as it were, Degrees of Ambition in Mankind; the *firſt*, that of ſuch as deſire to aggrandize their private Power in their own Country; which is the moſt vulgar and degenerate: the *ſecond*, of ſuch as endeavour to enlarge the

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the Power and Empire of their Country, in reſpect of others; which is more noble, tho' no leſs cupidinous: but if any one ſhould ſtrive to reſtore and enlarge the *Power*, and *Empire of Mankind*, over the Univerſe of Things; this Ambition, (if it deſerves the Name of Ambition) is, without diſpute, more ſolid and majeſtic, than the others. But the *Empire of Man* over Things, is entirely founded in Arts and Sciences: for Nature cannot otherwiſe be commanded, than by obeying her Laws.

The great Advantage of the preſent Deſign.

33. But if the Utility of any particular Invention, can affect Mankind ſo much, as to make them think him more than human, who could, by any ſingle Benefit, oblige the whole Species; how much more noble muſt it appear, to diſcover ſome *one Thing, by which all others may readily be diſcovered*[i]? And yet to ſay the Truth, as we are greatly obliged to Light, becauſe by its Means we can ſee to Read, find our Way, exerciſe our Arts, and diſtinguiſh one another; whilſt the Sight of the Light it ſelf, is a more excellent and beautiful Thing, than theſe its various Uſes; ſo, without diſpute, the Contemplation of Things, as they are in themſelves, without Superſtition or Impoſture, Error or Confuſion, is itſelf, of greater Dignity, than all the Benefits of Invention[k].

That Arts and Sciences may be miſemploy'd.

34. If any one, in the laſt Place, ſhould object, that the Arts and Sciences may be wreſted, and turned to evil Purpoſes or Sin, Luxury, *&c.* this can have little Weight; becauſe it may be ſaid of all the beſt Things in the World, ſuch as great Capacity, Courage, Strength, Beauty, Riches, Light itſelf, *&c.* Let but Mankind recover their Right over Nature, which was given them by the divine Being; let them be well provided of Materials; and *rectified Reaſon*, and *ſound Religion*, will direct the Uſe[l].

Anſwer'd.

APHORISM

[i] *Viz.* A new *Machine*, or *Logic*, directing the Mind to act upon all Subjects, with great Advantage. This Diſcovery the Author, in another Place, compares to the Diſcovery of the Compaſs; thus. "As in former Ages, when Navigation was directed barely by obſerving the Stars, Men could do no more than coaſt it along the Shores of the old World; or croſs ſome narrow Seas; whilſt the Uſe of the Compaſs was required, before the great Ocean could be traverſed, and the new World be diſcovered: In like manner, the preſent Diſcoveries in Arts and Sciences, might be made by Inſtinct, Experience, Obſervation, and Contemplation; as lying not very remote from Senſe; but, before the deeper and more remote Parts of Nature can be laid open, a better and more perfect Way of uſing and working with the Mind is neceſſarily required." He farther obſerves, that "the new World of Knowledge, differs from the new World of *America*; the former being much better furniſhed with Arts, than the latter; ſo that the known Arts of *Europe* are great Things there: whereas, on the contrary, the Additions ſtill required to the Arts in uſe, muſt be of a higher kind, and ſo effectual, as to bend, ſubdue, and conquer Nature; or affect her radically: for it almoſt conſtantly happens, that the Things eaſy to find, prove but of little Service; whilſt the Roots of greateſt Virtue and Efficacy are deepeſt buried.

[k] See above, *Aph.* 124.

[l] Perhaps it is not eaſy to form any conſiderable Objection to the preſent Deſign, beſides thoſe that have been already anſwer'd. However, if any remain, they have a Right to be propoſed; even tho' derived, as poſſibly all the above-mention'd are, from *Anticipation*; or the common,

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APHORISM CXXX.

The Art of interpreting Nature, *no Stranger to the Mind.*

35. 'Tis now Time we ſhould propoſe the Art itſelf, *of Interpreting Nature*; wherein, tho' we conceive that we have laid down highly uſeful and juſt Precepts; yet we attribute no Perfection, or abſolute Neceſſity, to this Art of ours; as if nothing could be done without it. For it is our Opinion, that if Men were poſſeſſed of a juſt *Hiſtory of Nature and Experience*; were thoroughly verſed therein; and could command themſelves but in two Particulars; the one, in laying aſide received Opinions and Notions; the other, in witholding the Aſſent, for a Seaſon, from general Concluſions; they might, by their proper, and native Force of Mind, without any other Art, fall upon our *Form of Interpretation:* for the Whole is no more than a genuine and natural Work of the Mind; when the Obſtacles to it are removed: tho', doubtleſs, all will be made readier for uſe, and receive great Strength, by our Precepts.

The Art of Invention, to increaſe with Inventions.

36. Nor do we ſay, that nothing can be added to theſe Precepts of ours: on the contrary, we who do not highly eſteem the Mind in its own Faculty; but chiefly ſo far as it is furniſhed and joined with Things; ought to lay it down, that the *Art of Invention may grow up with Inventions themſelves* [m].

common, imperfect, and haſty Uſe of the rational Faculty. Upon a Retroſpection, thoſe that have produced appear chiefly perſonal; and are anſwer'd, accordingly, by Arguments *ad Hominem*; that do not directly affect the Main of the Queſtion; only tend to mollify and aſſuage Mens Minds, and allay the Winds of Prejudice, and haſty Oppoſition.

[m] The Author's Piece, entitled *Cogitata & Viſa*, which was a rough Draught of this firſt, or preparatory Part of the *Novum Organum*, concludes thus. "The Matter we have in hand is not "an Opinion, but a Work; and not deſigned to lay the Foundations of any *Sect* or partial *Doctrine*; but to prove generally, and extenſively uſeful. Whence it has required the greater "Care, and Conſideration, not only with regard to the perfecting of the Thing itſelf; but "alſo with regard to the manner of delivering and communicating it. For it is commonly "found, that Men have Views to Fame, and Oſtentation; ſometimes in concealing, and "ſometimes in uttering the Knowledge they think they have acquired. And thoſe alſo who "have Things but of little Weight to offer, uſually deſcribe and put them off in Half-lights; "the better to ſerve and humour their own Vanity. But for our Undertaking, we judge it "of ſuch a Nature, that it were highly unworthy to pollute it with any Degree of Ambition "or Affectation. And yet, unleſs we were greatly unskilled in the Nature of Mens Minds, "and of Things; and deſired to enter the Road at once, without making the leaſt Trial "thereof; it lies upon us to remember, that *inveterate Errors can only be rooted out by Art, and gentle Treatment:* and that, therefore, a certain *Prudence*, and *Compliance*, muſt be "uſed, ſo far as may comport with Candor and Simplicity; in order to prevent Oppoſition, "before it is made. And, for this Purpoſe, we are preparing a *Philoſophical Work*, that "may have a quiet and agreeable Acceſs to the Senſes of Men. And this, we hope, will prove "the eaſier, becauſe we do not propoſe our ſelves as Leaders; but derive and ſcatter Light from "Nature herſelf: ſo that there ſhall hereafter be no occaſion for Leaders. But Time, in the "*Interim*, being on the Wing; and the Author too much engaged in Civil Affairs; eſpecially conſidering the Uncertainties of Life; he would willingly haſten to ſecure ſome "Part of his Deſign from Contingencies: and after much cloſe Thought, and a deliberate Conſi-

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" Conſideration, he determined, that, to prevent ſo uſeful a Thing from Diſaſter, the beſt " Courſe was to propoſe and lay down certain *Tables of Invention*, or *Forms of genuine Enquiry*, " that is, the digeſted Matter of Particulars, deſign'd for the Work of the Underſtanding; and " this in ſome determinate Subjects, by Way of Example, or a *palpable Model of the Whole*. " Nor could he deviſe any thing better, for ſetting the true Manner of Procedure, and the " Errors of the Way, in a clear Light; or for evidently ſhewing, that the Things deliver'd " are ſolid, and not the Sport of Words; and, again, for diſtinctly pointing out what they ſhould " avoid, who either diſtruſt the Deſign, or conceive too highly of it. And hence, tho' we " ſhould not our ſelves compleat the Undertaking; yet Men, of a ſolid and ſublime Genius, " being thus admoniſhed by what we have offer'd, may, without any greater Aſſiſtance, ex- " pect the reſt from themſelves; and finiſh it. For, as to the Matter in hand, we are almoſt of " his Opinion, who ſaid, *This is enough for the Wiſe; and for the Unwiſe, more would not be* " *ſerviceable*. But as it would have appear'd too abrupt, to have begun with the *Tables* them- " ſelves; we thought proper to introduce them by this *Preparatory Diſcourſe*.

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Novum Organum Scientiarum :

PART II.

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PART II.

SECT. I.

Particular APHORISMS *for Interpreting* NATURE: *or, the Means of Enlarging the* HUMAN POWER *and* KNOWLEDGE, *by the Diſcovery of* FORMS.

APHORISM I.

1. (1.) THIS the Office, and End, of the *human Power*, to generate, or ſuperinduce, a new Nature, or Natures, upon a Body aſſign'd: and, (2.) the Office, and End, of the *human Knowledge*, to diſcover the *Form* of a Nature aſſign'd; that is, its real Difference, naturizing Nature, Law, or the Fountain from whence it flows; which are Terms we uſe, in order to give ſome tolerable Notion of our Meaning [a]. And, ſubſervient to theſe two *primary Works*, there are two other *ſecondary ones*, of inferior Conſide-

The Office of the human Power, and Knowledge.

[a] For a fuller Notion of *Forms*, ſee below, *Aph.* 2, 17, 20. and *Sect.* II. *Aph.* 23, 27, *&c.* But, to render this *Aphoriſm* more clear and intelligible; we may turn it thus. "Upon a given Baſis "of Matter, to form, or introduce, a new Nature, in all poſſible Caſes, is the Uſe and Exerciſe of our Powers; and to diſcover the *Cauſes* of the Effects in all Subjects, is the Uſe "and Exerciſe of our Knowledge: which are two coincident Intentions; and, in Effect, the "ſame. For what, in Speculation, appears to be the *Cauſe*; is, in Practice, the *Means* of "Action; and directs us in the performing the Thing. Thus, for Example, upon finding that "the ſpecific and determinate Virtues, or Taſtes and Odours of certain aromatic Plants, reſide "in their Eſſential Oils; we are hence directed to obtain theſe Oils, in order to procure the "peculiar Virtues, Taſtes, and Odours of ſuch Plants. And thus the Caſe holds univerſally; "as will more fully appear hereafter." See below, *Aph.* 3, 4, 11, 12, *&c.*

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Conſideration: thus, (1.) to the former belongs the *Tranſformation of Concretes, from one Thing into another, through all poſſible Variety*; and, (2.) to the latter, the *Diſcovery* of the *latent Proceſs in every Generation and Motion, as it is continued from the manifeſt Efficient, and the manifeſt Matter, up to the giving of the Form*; and, in like manner, there belongs to it the Diſcovery of the *concealed Structure* of quieſcent Bodies, or Bodies that are not in Motion [b].

Aphorism II.

Cauſes of four Kinds.

2. How inadequate and unſucceſsful that *human Knowledge* is, which we have at preſent in Uſe, may appear from the Things commonly aſſerted [c]. 'Tis certain, that *true Knowledge, is the Knowledge of Cauſes.* Now we may properly make four Kinds of *Cauſes*; *viz.* (1.) the *Matter*; (2.) the *Form*; (3.) the *Efficient*; and, (4.) the *End.* But the latter, or *final Cauſe*, is ſo far from being ſerviceable, that it corrupts the Sciences; unleſs it be reſtrained to human Actions [d]. The *Diſcovery of Forms*, is held deſperate; and the *efficient* and material Cauſes, in the manner they are at preſent ſought after and admitted, (*viz.* the *remote Efficient*, and the remote *material Cauſes*, without the Knowledge of the *latent Proceſs* up to the *Form*,) are trifling and ſuperficial Things; that ſcarce at all contribute to real, and effective Knowledge. 'Tis true, we above noted and corrected the Error of the Mind, in attributing the Eſſences of Things to *Forms* [e]: but altho' in *Nature*, nothing really exiſts beſides individual Bodies, that perform individual Actions, by a *Law*; yet in *Doctrine*, this *Law* itſelf, the Enquiry into it, with the Diſcovery and Explanation thereof, is the Foundation as well of *Knowledge*, as of *Works:* and 'tis this *Law*, and its Parts, that we underſtand by the name of *Forms* [f]; eſpecially as the Term already prevails, and is grown familiar [g].

Forms, what.

Aphorism III.

The Knowledge of Forms *leads to great Diſcoveries.*

3. He who knows the Cauſe of any Nature, as, for Inſtance, that of Heat, or Whiteneſs, in certain Subjects only, has an imperfect *Knowledge*; he who can produce an Effect upon certain *Matters* only, among thoſe ſuſceptible thereof, has, in like manner, an imperfect *Power*; and he who

[b] The preſet Sett of *Aphoriſms* will require a conſiderable Degree of Attention; and ſhould be read in the manner of *Mathematical Demonſtrations.*

[c] Which are ſeldom found, upon farther Enquiry, to be derived from their *Cauſes*; ſo that they frequently fail, when uſed as *Rules of Practice.* See the *Firſt Part*, paſſim.

[d] See *Vol.* I. *p.* 83, 84, *&c.*

[e] See above, *Aph.* 51.

[f] By the Word *Forms*, therefore, we are to underſtand a full and clear Knowledge of the *Law, Procedure*, or *Means* of Nature, in producing Effects. This Notion will, however, be farther improved and explained hereafter. See below, *Aph.* 17, 20.

[g] The Author every where endeavours, as much as poſſible, to retain the ancient *Terms*; tho' he conveys new Meanings under them; as judging it beſt to innovate, like Time, by Degrees.

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who knows only the *efficient* and *material Causes*[h], which are unstable, and, in some Cases, no more than Vehicles, or Causes that carry the *Form*; may arrive at new Inventions in a Subject somewhat similar and prepared; tho' he cannot remove the Boundaries of Things that are deeper fixed: but he who understands *Forms*, will perceive the Unity[i] of *Nature* in the most dissimilar Cases; and may therefore discover and produce such Things as have not hitherto appeared; or such as neither the Vicissitude of Nature, nor the Industry of Experimenting, nor Chance itself, could ever have brought into being: nor would they otherwise have entered the Thoughts of Men[k]. So that Justness of *Theory*, or Contemplation, and Freedom of *Practice*, or Operation, depend upon the *Discovery of Forms.*

APHORISM IV.

4. Altho' the *human Power*, and *human Knowledge*, are nearly allied, and, in a manner the same; yet by reason of the pernicious and inveterate Custom of dwelling in abstract Notions, 'tis abundantly the safest Way to begin and build up the Sciences, from those Foundations which are laid in order to *Practice*, so as to let this mark out, and determine the *Theory*. We shall, therefore, here examine what Kind of Rule, Direction, or Leading, a Man would principally wish for, in order to superinduce an assigned Nature upon a given Body. *Practice to govern Theory.*

[h] See *Aph.* 2. of this Part.

[i] *Viz.* The *Uniformity*, or rather the *Identity*, or *Sameness, of Nature*; for by the Supposition, *Forms* are the *Laws of Nature*; according to which she constantly acts; that is, ever in one and the same manner: so that a Knowledge of *Forms* is a Knowledge of the *Unity, Identity*, or what may be called the *Manner of Nature.*

[k] In another Place, the Author has broke this *Aphorism* into Parts; which may render it more intelligible; *viz.*

1. "He who understands the Cause of any *Nature* in certain Subjects only, has but an imperfect *Knowledge*; as he who can produce an Effect only in one certain Matter, of all those susceptible thereof, has but an imperfect *Power.*

2. "He who understands *efficient* and *material Causes*, is thence instructed how to compound, divide, transfer, or produce, and even proceed to new Discoveries, in Subjects of a somewhat similar and disposed Matter; but cannot by this Means alter the deep fixed Limits of Things.

3. "He who understands the *Causes* of any *Nature* but in certain Subjects, knows only the efficient, or *material Causes*, which are unstable Things; and no more than *Vehicles of Causes*, wherein the *Form* resides: but he who understands the *Uniformity of Nature*, in very different Kinds of Subjects, has a Knowledge of the *Forms* of Things.

4. "He who understands *Forms*, will discover and produce such Things as are hitherto unknown, and unproduced; and such as neither the Revolutions and Changes of Nature, nor Experience, would ever have manifested; nor the Thoughts of Men ever otherwise have conceived.

5. "The Way and Perfection of Truth and Power is the same; *viz.* the Discovery of *Forms*; upon which ensues both a just Theory, and an unlimited Practice. And hence it appears, that the Perfection of human Knowledge, both speculative and practical, is the *Knowledge of Forms*. For to contemplate the Process of Nature in her Works, is a just *Theory*, that leads to a perfect *Practice.*" No Wonder, therefore, if the *Discovery of Forms* be the sole Business of this *Second Part* of the *Novum Organum.*

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The Properties of a good Rule for Practice.

5. Thus if any one ſhould deſire to ſuperinduce upon Silver the yellow Colour of Gold, and to increaſe its ſpecific Gravity, or to ſuperinduce Tranſparency upon an opaque Stone; Malleability upon Glaſs; Vegetation upon a Body not of the vegetable Kind, *&c.* he would, doubtleſs, deſire to be ſhewn, (1.) ſome Way that ſhould not fruſtrate his Labour, or fail him upon the Trial. (2.) He would deſire ſuch a Method as ſhould not tie him down, or confine him to the Uſe of certain determinate Means, and particular Ways of Working; becauſe he might, perhaps, be unprovided herein; or not have the Power and Convenience of procuring the neceſſary Helps: And if there were other Methods, within his Power, beſides that delivered in the Rule, for ſuperinducing ſuch a Nature, that he might not be excluded their Uſe, thro' the Limitation, or Narrowneſs of his Rule; and ſo not receive the Benefit of thoſe Methods. (3.) He would wiſh to be ſhewn ſomething leſs difficult than the Operation he enquires after; and ſuch as might approach nearer to Practice.

The Precept for a perfect Rule of Practice.

6. The Precept, therefore, for a true and perfect practical Rule, is, that *the Rule be ſure, unreſtrained to particular Means or Expedients; and diſpoſe or lead directly to Action:* and this is the ſame Thing with the Diſcovery of a real *Form*. For, the *Form* of any Nature, is ſuch, that where it is, the given Nature muſt infallibly be: The *Form*, therefore, is perpetually preſent, when that Nature is preſent; aſcertains it univerſally, and accompanies it every where. Again, this *Form* is ſuch, that when removed, the given Nature infallibly vaniſhes: Therefore the *Form* is perpetually wanting, when that Nature is wanting; and thus confirms its Preſence, or Abſence; and goes and comes with that Nature alone. Laſtly, a true *Form*[m], is ſuch as can deduce a given Nature from ſome *eſſential Property*[n], which reſides in many Things; and is more intimately known, or linked to Nature, than the *Form* itſelf. The Precept, therefore, for a true and perfect *Theoretical Axiom* is, *to find another Nature, that may be convertible with the Nature aſſigned; yet limit the more common Nature, like a true Genus*[o]. Theſe two Precepts, the former whereof is practical, and the latter ſpeculative, are one and the ſame Thing[p]; and ſo what proves moſt uſeful in *Practice*, is alſo perfectly juſt in *Theory*[q].

The Precept for a true and perfect theoretical Axiom.

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[m] *Viz.* A Knowledge of Nature's Means, in producing any Effect. See *Aph.* 3. of this *Part*.

[n] To find this Property, therefore, readily diſpoſes and leads to Practice, by ſingling out one particular Property, whereon the reſt depend; inſtead of purſuing a great many. Thus, it ſhould ſeem, that if any Matter could be made as ponderous as Gold, it would become Gold; or if any Matter could be made as hard and reſplendent as the Diamond, it would become Diamond, *&c.*

[o] So, for Example, by enquiring into the *Form of Heat*, a particular ſhuddering Motion among the ſmall Parts of Bodies, ſeems the convertible Nature, or *Form*, that, like a true *Genus*, limits the more common Nature of Heat. See below, *Aph.* 15, 16 17, 18, *&c.* but particularly, *Aph.* 20 (3) and (4.)

[p] See *Part* I. *Aph.* 3.

[q] The Meaning is, that to gain the beſt *practical Rules*, we muſt diſcover the *Forms* of Things; that *Forms* are *Rules*; and *Theory* and *Practice* the ſame Thing. The following Aphoriſms will add more Light hereto. See in particular, *Aph.* 9.

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APHORISM V.

7. But the *Rule*, or *Axiom*, for the Tranſmutation of Bodies[r], is of two Kinds. The *firſt*, regards a Body, as a certain Collection or Combination of *ſimple Natures*[s]. Thus, for Example, in Gold, there meet together Yellowneſs, a determinate Gravity, Malleability to a certain degree, Fixedneſs in the Fire, a particular Manner of flowing in the Fire, a determinate Way of Solution, *&c.* which are the ſimple Natures in Gold. And, therefore, this Kind of *Axiom* deduces the Thing from the *Forms* of ſimple Natures. For he who underſtands Forms, and the Manner of ſuperinducing this Yellowneſs, Gravity, Ductility, Fixedneſs, Faculty of Fuſion, Solution, *&c.* with their particular Degrees, and Proportions, will conſider and provide how to join them together in ſome Body; ſo that a Tranſmutation into Gold ſhall follow[t]: and this Kind of Operation regards the principal Action. For the Way is the ſame of producing any one ſimple Nature, as many: only Man is more confined and reſtrained in working where many are required; becauſe of the Difficulty of uniting a Variety of Natures together, which do not eaſily meet, except in the common and beaten Roads of Nature[u]. And yet this Method of working, which regards ſimple Natures, tho' in a concrete Body, may proceed upon ſuch Principles as are conſtant, eternal and univerſal in Nature; and afford ſuch broad Ways to the human Power, as the Mind, in the preſent State of Things, can ſcarce conceive or repreſent to itſelf[w]. *Axiom for the Transformation of Bodies.*

8. But the *ſecond* Kind of *Axiom*, which depends upon diſcovering the *latent Proceſs*[x], does not proceed by ſimple Natures; but by concrete Bodies, ſuch as they are found in the ordinary Courſe of Nature: For Example, when Enquiry is made from what Origin, by what Means, and what Procedure, Gold, or any other Metal, or Stone, is generated, from its firſt fluid Matter, or Rudiments, up to a perfect Mineral: Or, again, by what Proceſs Plants are generated, from the firſt Concretions of their Juices in the Earth, or from the Seed, to a formed Plant; together with the whole Succeſſion of Motion, and the various and continued Endeavours of Nature. Underſtand the ſame of regularly explaining the Production of Animals, from the firſt Act of Generation; and ſo of other Bodies[y]. *Second Axiom for Tranſmutation.*

[r] See *Aph.* 1. of this Part.

[s] Or what we commonly call *Properties.*

[t] See *Vol.* III. *p.* 88, 89.

[u] *Viz.* As they are united by Nature herſelf; for Example, in Gold, Quickſilver, *&c.*

[w] There are ſeveral Attempts of this Kind in the *Sylva Sylvarum.* See particularly, the Articles *Gold*, *Tranſmutations*, &c. But a more perfect *Hiſtory of Nature and Art* muſt be procured, before any ſucceſsful Method of this Kind can be formed.

[x] *Viz.* The ſeveral continued Steps, or whole Procedure of Nature, in producing Effects. See below, *Aph.* 6.

[y] Let an Eye be had all along to the firſt *Aphoriſm* of this *Section*; where a Foundation of the Whole is laid.

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Regards Motions, as well as Generations.

9. And this Enquiry does not only regard the Generation of Bodies; but likewiſe other Motions and Works of Nature: for Example, when Enquiry is made into the whole Series and continued Actions of Nutrition, from the firſt receiving of the Aliment, to a perfect Aſſimilation; or, after the ſame Manner, into the voluntary Motion of Animals, from the firſt Impreſſion of the Imagination, and the continued Efforts of the Spirit, down to the bending and moving of the Limbs; or, again, in explaining the Motion of the Tongue, Lips, and other Organs, up to the Formation of articulate Sounds. For theſe Things alſo have regard to concrete Natures, or Natures aſſociate and organical; and belong, as it were, to the particular and eſpecial Cuſtoms of Nature; and not to the fundamental and common Laws which conſtitute *Forms*. It muſt indeed be allowed, that this Method ſeems more facile, quick and promiſing, than the *primary Method*, above mentioned[y].

The Practice anſwering to the Theory.

10. But the effective Part, which anſwers to this ſpeculative one, in like manner extends, and advances its Operation, from thoſe Things which are commonly found in Nature, to certain others that lie near, or not very remote: tho' the higher and radical Operations upon Nature require the former *primary Axioms*. And where Mankind has no Power of operating, but only of contemplating, as in the Celeſtial Bodies, which we cannot operate upon, change or transform; yet the Enquiry of the Fact, or Truth of the Thing, belongs, no leſs than the Knowledge of Cauſes, and Relations, to the *primary*, and *univerſal Axioms* of ſimple Natures[z]: ſuppoſe, for Example, the Enquiry about the Nature of ſpontaneous Rotation, Attraction, and many other Natures; which are more common and familiar to us than the Celeſtial Bodies themſelves. And let no one expect to determine the Queſtion, whether the diurnal Motion belongs to the Heavens or the Earth, unleſs he firſt underſtand the Nature of ſponataneous Rotation[a].

Aphorism VI.

Latent Proceſs, what.

11. The *latent Proceſs* we ſpeak of[b], is a thing that cannot eaſily enter the Mind, ſo beſet as it is at preſent: for we do not here mean certain viſible Meaſures, or Signs, or Steps of Procedure in Bodies; but a perfect continued Proceſs, the greateſt Part whereof eſcapes the Senſe.

Contains numerous Particulars.

12. Thus, for Example, in every Generation and Transformation of Bodies, it comes to be enquired what is loſt, or flies off; what ſtays behind; what is added; what dilated; what contracted; what united; what ſeparated; what continued; what cut off; what impells; what obſtructs; what prevails; what yields, &c.

13. Nor

[y] See above, §. 7. and again, *Aph.* 1.

[z] See above, §. 7.

[a] Becauſe the more ſimple, common, and obvious Natures muſt be underſtood, before we can hope to underſtand ſuch as are compounded, remote, or abſtruſe. See *Vol.* II. *p.* 15, 16, &c.

[b] See *Part* II. *Aph.* 1.

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13. Nor are these Things only to be sought in the Generation, or Transformation, of Bodies; but after the same manner, it comes to be enquired in all other Alterations and Motions; what precedes; what succeeds; what is quick; what slow; what gives Motion, what governs it; and the like. But all these Things remain unknown, and untouched in the *Sciences*, which are, at present, formed in a very gross, and perfectly inadequate Manner. For as every natural Action is performed by the smallest Particles, or at least by Particles so small as to escape the Senses; let no Man expect to govern Nature, or turn her Course, till he has, in a proper manner, become acquainted with these small Particles[c]. *Unregarded in the Sciences.*

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14. Again; the Enquiry, and Discovery, of the concealed *Structure*[d] in Bodies, is as much a new Thing, as the Discovery of the *latent Process* and *Form:* for Men have hitherto trod only in the outer Courts of Nature; and are not prepared to enter within. But no one can superinduce a new Nature upon a given Body; or successfully and appositely change it into another Body; unless he has first a competent Knowledge of the Body to be altered, or transformed; as without it he will fall upon frivolous Methods, or at least such as are difficult, perverse and unsuitable to the Nature of the Body whereon he operates: and therefore in this respect also, a Way must be necessarly opened and prepared. *The concealed Structure, unknown.*

15. Labour is properly and advantageously bestowed upon the *Anatomy of organical Bodies*; such as those of Men and Brutes: as it seems a Thing of Subtilty, and a good Scrutiny of Nature. But this kind of Anatomy is a Work of the Eye, subject to Sense, and takes place only in organical Bodies; so that it is an obvious and facile Thing, compared with the real *Anatomy of the latent Structure* in Bodies accounted similar; especially in specificate Things and their Parts; as Iron, and Stone; the similar Parts of Plants and Animals, as the Root, Leaf, Flower, Flesh, Blood, Bone, *&c.* And in this Particular, human Industry has not been entirely wanting; as appears from the Separations of supposed similar Bodies by Distillations, and other Methods of Solution, in order to shew the Dissimilarity of the Compound, by separating and collecting its different homogeneous Parts together: Which is a Thing of Use, and makes to our present Purpose: tho' it is often fallacious; because many Natures are attributed to Separation, as if they pre-existed in the Compound; whilst they are really given, and originally superinduced by the Fire, Heat, or other Method of resolving them. And this also is but a small Part of the Business of finding the true Structure of a Compound; as this Structure is a Thing of very great Delicacy and Subtilty, and rather confounded *And difficult to come at.*

[c] See *Vol.* III. *p.* 222, *&c.*
[d] See above, *Part* II. *Aph.* 1.

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confounded them diſcovered, and brought to Light, by the Operations of the Fire [c].

Induction to be uſed inſtead of Fire, in the Analyſis of Bodies.

16. Bodies, therefore, are to be ſeparated, and reſolved, not by Fire, but by *Reaſon*, and *genuine Induction*; with the Aſſiſtance of Experiments: and again, by comparing them with other Bodies, and reducing them to ſimple Natures, and their Forms, which meet and are combined in the Compound; for we muſt go over from *Vulcan*, to *Minerva*, if we would bring to Light the real Textures and Structures of Bodies; wherein all the ſecret and ſpecific Properties and Virtues of Things depend; and from whence the Rule of every powerful Alteration, and Transformation, is to be derived.

The Spirit and tangible Parts of Bodies, to be enquired after.

17. Thus, for Example, we muſt enquire, what the *Spirit* in every Body is; and what the *tangible Subſtance*; whether this Spirit be copious and turgid, or hungry and ſmall in Quantity; whether it be thin or groſs; airy or fiery; briſk or ſluggiſh; weak or ſtrong; in Progreſs or Receſs; interrupted or continued; agreeing or diſagreeing with the Things external and circumjacent, *&c.* And in like manner we are to enquire about the tangible Subſtance (which admits as many Differences as the Spirit;) what its Coats, its Grain, and Fibres, its Kinds of Texture. Again, under the ſame Enquiry comes the Diſtribution of the Spirit through the corporeal Maſs; with its Pores, Paſſages, Veins, Cells, and the Rudiments, or firſt Lineaments, of the organical Body. In which Caſes alſo, and conſequently in the Inveſtigation of every *concealed Structure*, a true and clear Light is afforded, by our *primary Axioms*, ſufficient to diſpel all Darkneſs and uſeleſs Subtilty [f].

Aphorism VIII.

Objections to the Buſineſs in hand, anſwer'd.

18. Nor will this bring us to the Hypotheſis of *Atoms*; which erroneouſly preſuppoſes Vacuity, and a permanent State of Matter; but to real Particles, ſuch as they are found. Nor need any one dread this Subtilty as inexplicable [g]; for, on the contrary, the more the Enquiry tends to ſimple Natures, the plainer and clearer will every Thing become;

[c] The Fire is a very improper Analyſer in many Caſes; eſpecially where the Subject is capable of being ſcorched, or render'd empyreumatic; which quite perverts or alters its Nature; as wee ſee in burnt Sugar, *&c.*

[f] See *Part* II. *Aph.* 1, 5, and 7.

[g] This Caution appears to be ſeaſonably interpoſed; for, doubtleſs, many Readers, who have not been uſed to abſtruſe Speculations, or mathematical Reaſoning, will be at a Loſs to perceive what the Author drives at; or be apt to imagine the Whole an intricate Subtilty, not worth the Trouble of Underſtanding. Thoſe who think in this manner, may pleaſe to paſs over, for a Time, the firſt ten *Aphoriſms* of this *Second Part*, and begin with the eleventh; for the *practical Tables*, and actual Method of inveſtigating the *Forms of Things*; (where all is performed by Examples and ſenſible Repreſentations;) will prepare the Mind, and facilitate the underſtanding of theſe more abſtruſe Aphoriſms, if read after ſome tolerable Notion of the Buſineſs in hand, and the Method of conducting it, is procured.

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become; the Buſineſs being thus brought from Multiplicity to Simplicity; from Incommenſurables to Commenſurables; from Surds to Computables; and from Things finite and vague, to ſuch as are definite and certain; as in the Caſe of the *Letters of the Alphabet*, and the *Notes* of *Muſic* [h]. And 'tis then that a natural Enquiry proceeds juſtly, when phyſical Conſiderations terminate in ſuch as are mathematical [i]. And again, let no one be frighted at *Multitude* or *Fractions:* for in Things performed by Numbers, 'tis as eaſy to ſet down, or think of a Thouſand, as of One; or of the thouſandth Part of an Unite, as of an Unite itſelf.

Aphorism IX.

19. From the two Kinds of *Axioms* above laid down [k], ariſes a juſt *Diviſion of Philoſophy* and the *Sciences*; taking the received Terms (which come neareſt in expreſſing the Thing) agreeably to our own Meaning; *viz.* ſo that the *Enquiry of Forms*, which from the Reaſon of the Thing itſelf, and their own Law, are eternal, and immutable, may make *Metaphyſics*; and the Enquiry into the *Efficient*, the *Matter*, the *concealed Proceſs*, and *latent Structure*, may conſtitute *Phyſics* [p]: as theſe ſeveral Particulars regard the common and ordinary Courſe, and not the fundamental and eternal Laws of Nature. And let each have its correſponding Branch of Practice; and *Mechanics* be made ſubſervient to *Phyſics*; and *Magic* (taking that Word in its genuine Senſe) to *Metaphyſics*; on account of the wide Paſſage which Magic affords into, and the great Command it has over Nature [m]. And having thus eſtabliſhed the Scope and End of our Doctrine; we proceed, in a regular Manner, to *Precepts* [n]. *Philoſophy divided, with regard to primary, and ſecondary Axioms.*

Aphorism X.

20. The *Indications for the Interpretation of Nature*, include two general Parts: the *firſt* relates to the raiſing of *Axioms* from Experience; and the *The Indications for interpreting Nature.*

[h] For as all the Variety of Sounds and Words are made out of twenty-four Letters; and all the Variety of Tunes out of eight Notes; ſo a few *ſimple Natures*, or *primary Properties*, (ſuch as *Fluidity* and *Firmneſs*, *Volatility* and *Fixedneſs*, &c.) appear to compoſe all that Variety which we find in Bodies.

[i] For all the Motions, Powers, Forces, Operations, Energies, and Quantities of Bodies, muſt be computed, meaſured, and determined, before *Natural Philoſophy* can be perfected. But let not the *Calculation* be raſhly applied, before the *Facts* are diſcovered and aſcertained; for *Mathematics* is not to *conſtitute*, but only to *limit Phyſics*. See *Vol.* I. *p.* 90.

[k] *Aph.* 5. §. 7. and 8.

[l] See *Vol.* I. *p.* 73, 74.

[m] See *Vol* I. *p.* 87, &c. This Diviſion appears extremely juſt and uſeful; but has not, perhaps, been any way conſider'd and regarded as it deſerves, on account of the imperfect State of Philoſophy: for as Philoſophy improves, this Diviſion muſt, almoſt of Neceſſity, take Place.

[n] The nine preceding *Aphoriſms* are a kind of cloſe-wrought, axiomatical Chain of Doctrine, that, when rightly underſtood, will appear deep, ſagacious, and drawn from *Nature*; ſo as to lay a firm, juſt, and adequate Foundation for the intended *New Logic*, or *Method of inveſtigating the Forms of Things.*

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the *ſecond* to the deducing or deriving of new Experiment from *Axioms* [o]. The *firſt* is divided into three Kinds of *Adminiſtrations*, or Helps; *viz.* the *Helps* (1.) for the *Senſe*; (2.) for the *Memory*; and, (3.) for the *Reaſon*.

Viz. *A Hiſtory of Nature.*

21. (1.) Therefore, a juſt and adequate, *Natural and Experimental Hiſtory*, is to be procured, as the Foundation of the whole Thing: for we are not to fancy, or imagine, but to diſcover what are the Works and Laws of Nature.

Tables of Inſtances.

22. (2.) But *Natural* and *Experimental Hiſtory* is ſo copious and diffuſive a Thing, as to confound and diſtract the Underſtanding; unleſs ſuch Hiſtory be digeſted and ranged in proper Order: therefore *Tables, and ſubſervient Chains of Inſtances*, are to be form'd and digeſted in ſuch a Manner, that the Underſtanding may commodiouſly work upon them.

Genuine Induction.

23. (3.) And tho' this were done; yet the Underſtanding left to its ſelf, and its own ſpontaneous Motion, is unequal to the Work, and unfit to enter upon the raiſing of *Axioms*; unleſs it be firſt regulated, ſtrengthned and guarded: therefore, in the *third* place, genuine and *real Induction* muſt be uſed as the *Key of Interpretation*. But we are to begin at the End; and proceed backwards to the reſt [p].

The Procedure of the Enquiry of Forms.

24. The Enquiry of *Forms* [q] proceeds in this manner. *Firſt*, all the known Inſtances agreeing in the ſame Nature, tho' in the moſt diſſimilar Subjects, are to be brought together, and placed before the Underſtanding. And this Collection is to be made hiſtorically, without any overhaſty Indulgence of Speculation; or any great Subtilty, for the preſent. We will illuſtrate the Thing by an Example in the *Enquiry into the Form of Heat*.

[o] See *Vol.* III. *p.* 314, *&c.* This *deriving of new Experiments from Axioms*, is a Part of the preſent Work, that was not publiſhed. See below, *Aph.* 21.

[p] That is, we are to begin with *Induction*; and proceed backwards to the forming of a *Natural* and *Experimental Hiſtory*; and then to the forming of *Axioms*, &c.

[q] Whereon the Advancement and Perfection of Philoſophy, the Sciences, and all practical Arts, depend; as has been ſhewn above, *Aph.* 1—7.

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The true METHOD *of Discovering* FORMS; *illustrated, by an Example in the* FORM *of* HEAT.

TABLE I.

INSTANCES agreeing in the NATURE of HEAT[a].

(1.) *THE Sun's Rays, especially in Summer, and at Noon-day.* (2.) *The reflex and collected Rays of the Sun; as betwixt Mountains, and Walls; but particularly in Burning-glasses.* — Affirmative Instances of Heat.

(3.) *Fiery Meteors.* — Celestial.

(4.) *Burning Lightning.*

(5.) *Eructations of Flame from the Caverns of Mountains,* &c. — Subterraneous.

(6.) *Flame of all Kinds.*

(7.) *Ignited Solids.* — Common and extraordinary.

(8.) *Natural Hot Springs.*

(9.) *Heated Fluids.*

(10.) *Hot Vapours, and Fumes: and the Air itself; which conceives a violent and raging Heat, when pent up; as in Reverberatory Furnaces.*

(11.) *Certain clear, sultry Seasons, from the Constitution of the Air; without regard to the Time of Year.*

(12.) *Subterraneous Air, confined in certain Vaults or Caves; especially in the Winter.*

(13.) *All shaggy Matters; as Wool, the Furs and Plumage of Animals, have some degree of Warmth.*

[a] *Viz.* A Collection of the Particulars wherein *Heat* is found; so that the following Particulars agree in having the Nature of Heat common to them all.

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(14.) *All Bodies, as well ſolid as fluid, denſe as rare, even the Air itſelf, expoſed to the Fire for a Seaſon, become hot.*

By Attrition, or Percuſſion. (15.) *The Sparks cauſed by a ſtrong Percuſſion betwixt the Flint and Steel.*

(16.) *All Bodies upon a ſtrong Attrition; as Stone, Wood, Cloth,* &c. *whence the Axletrees and Wheels of Carriages, ſometimes take fire: and it has been a Practice to procure Fire by Attrition, in the* Weſt Indies [b].

Putrefaction. (17.) *Green and moiſt Plants laid up and preſs'd cloſe together; as Roſes, Peaſe in Carts,* &c. *ſo likewiſe Hay ſtack'd before 'tis dry, often takes fire* [c].

Solution. (18.) *Quick-lime, ſlaked with Water.*

(19.) *Iron, when firſt diſſolved with acid Spirits, tho' contained in a Glaſs, without any Aſſiſtance of the Fire: and, in like manner, Tin,* &c. *tho' not ſo intenſely.*

Animals. (20.) *Animals, eſpecially their inward Parts; tho' in Inſects, by reaſon of the Smallneſs of their Bodies, no Heat is diſcoverable to the Touch.*

Excrements. (21.) *Horſe-dung, and the like recent Excrements of Animals.*

Chemical Preparations. (22.) *Oil of Vitriol,* Aqua Fortis, *&c. have the Effects of Heat in burning Linen,* &c.

(23.) *The eſſential Oil of* Origanum, *and the like, have the Effects of Heat in burning the Teeth* [d].

(24.) *Well rectified Spirit of Wine, has the Effect of Heat; ſo as to blanch and harden the White of an Egg put into it, almoſt like boiling Water: it alſo hardens or ſcorches, as it were, Bread that is ſuffer'd to lie therein.*

Aromatics. (25.) *Spices, and ſpicy Herbs, ſuch as Dragons, old Creſſes,* &c. *tho' not hot to the Hand, either whole nor in powder; yet when chewed a little, are found hot, or burning, to the Tongue and Palate.*

Acids. (26.) *Strong Vinegar, and all Acids, cauſe a Pain, not greatly differing from that produced by Heat, when ſuch Acids are applied to any Part of the Body, that is not defended by a Scarf-skin; as the Eye, or Tongue, for Example, that are naked, or any other Part that is wounded and laid bare.*

(27.) *Even*

[b] *Viz.* By rubbing two Sticks together in a particular manner.

[c] See *Boerhaave's Chemiſtry, Proceſs* 88. or the *Putrefaction of Vegetables.* See alſo the Paper of Dr. *Cox,* upon the ſame Subject, in the *Philoſophical Tranſactions.*

[d] All the eſſential aromatic Oils, ſeem heating and inflaming to the Body; particularly the Oils of *Cinnamon, Cloves, Cortex Winteranus,* &c.

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(27.) *Even ſevere and intenſe Cold produces a Senſation like that of* Cold. *Burning* [e].

(28.) Inſtances *forgot, or omitted* [f].

And this Table *we call the* Preſenting, *or* Affirmative Table [g].

APHORISM XII.

25. In the *ſecond* Place, thoſe *Inſtances* are to be brought before the Underſtanding, which have not the *Nature* aſſigned; becauſe the *Form*, as we ſaid [h], ought no leſs to be wanting, where the given Nature is wanting; than to be preſent, where that is preſent: but as it would be endleſs to purſue theſe Inſtances throughout; *Negatives* are to be ſubjoined to the *Affirmatives*; and the want of the given Nature, to be conſidered only in ſuch Subjects as are neareſt related to thoſe wherein it reſides and appears. And this Table we call the *Table of Declination*; or of *Abſence in Approach* [i]. *The Method of forming the ſecond* Table.

TABLE II.

INSTANCES of APPROXIMATION; yet wanting the NATURE of HEAT.

The firſt Negative, or Subjunctive, Inſtance; to the firſt Affirmative.

(1.) *THE Rays of the Moon, Stars and Comets, are not found hot to the Touch; and the ſharpeſt Colds are obſerved* Negative Inſtances of Heat.

[e] —— *Boreæ penetrabile frigus adurit.* Thus the handling of Snow or Ice will make the Fingers glow.

[f] Obſerve, that this Table is here only to ſerve as an Example, and not as an actual Enquiry proſecuted to its due length, as thoſe of *Life and Death*, *Winds*, &c. in *Vol.* III. *p.* 337, 441, *&c.*

[g] Becauſe it exhibits the Facts, or ſhews in what Subjects the Nature enquired after reſides.

[h] See above, §. 6.

[i] Becauſe it exhibits thoſe Particulars, wherein, thro' Nearneſs, or apparent Similarity, the given Nature might be expected; and is yet found to be wanting. Thus, as the Rays of the Sun are found hot, the Mind is apt to infer the ſame, in a leſs Degree, of the Rays of the Moon: But the Rays of the Moon have no ſenſible Heat; tho' they are the very Rays of the Sun by Reflection.

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in the Full of the Moon. But when the Sun is in Conjunction with the larger Fixed Stars, or approaches near them, ſuch Stars are thought to augment the Heat; as when, for Example, the Sun is in Leo, *during the Dog-days* [k].

A ſecond, Negative Inſtance; to the ſecond Affirmative.

The celeſtial Kind.

(2.) *The Rays of the Sun, heat not in that call'd the Middle Region of the Air: and the Reaſon commonly aſſigned, with ſome Probability, for it, is, becauſe the Body of the Sun that emits the Rays, never ſufficiently approaches either that Region, or the Earth, which immediately reflects them: and this appears from the Tops of Mountains, unleſs extremely high, where the Snow continually lies. But, on the contrary, 'tis obſerved by ſome, that no Snow is lodged on the Tops of the Pike of* Teneriff, *and the* Andes, *or high Mountains of* Peru, *but only upon the lower Declivities. Beſides, the Air on the Tops of theſe Mountains is not found cold; but only thin and ſharp; ſo as on thoſe of* Peru, *to prick and vellicate the Eyes, and Mouth of the Stomach, and cauſe a Vomiting by their Acrimony. And, 'tis obſerved by the Ancients, that the Air was ſo thin on the Top of Mount* Olympus, *as to make it neceſſary for ſuch as went up, to carry along with them Spunges dipt in Vinegar and Water; and every now and then apply them to the Mouth and Noſe; becauſe the Air, through the great degree of its Rarifaction, was not there ſufficient for Reſpiration* [l]. *And on the Top of this Mountain there was ſaid to be ſo great a Serenity and Tranquillity, from Rain, Snow, and Wind, that the Letters drawn by the Fingers of thoſe who ſacrificed there, upon the Altar of* Jupiter, *would remain in the Aſhes of the Sacrifice, unaltered, till the Year enſuing. And at preſent, the Perſons that go up to the Top of the Pike of* Teneriff, *travel by Night, not by Day; and ſoon after Sun-riſing are adviſ'd and preſs'd by their Guides to make haſte down, for fear of being render'd Breathleſs by the Thinneſs of the Air* [m].

A third

[k] It might be proper, in Practice, or when any particular Enquiry is gone upon, to write theſe Tables in oppoſite Columns, on the ſame Paper; which would render the Whole more commodious, and ready for Uſe.

[l] Will this Expedient, in any reſpect, ſupply the Want of Air for Reſpiration?

[m] It is, with Certainty, found, by the *Barometer*, and otherwiſe, that the Air grows rarer and rarer, in proportion to the Height aſcended upon Hills.

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A third Negative; to the ſecond Affirmative.

(3.) *The Reflection of the Sun's Rays, in the Parts near the Polar Circles, is found exceeding weak, and faint, in Point of Heat; ſo that the* Hollanders, *who wintered in* Nova Zembla, *expecting, by the beginning of* July, *their Ship to be freed from the Maſs of Ice wherein ſhe was froze, found themſelves diſappointed; and were obliged to commit themſelves to their Long-boat. Therefore, the direct Rays of the Sun ſeem to have little Power, even upon a flat Surface: and ſo have the reflex Rays alſo, unleſs multiplied and united, as they are when the Sun becomes more perpendicular; becauſe the Rays then ſtrike in acuter Angles, and ſo come nearer to one another; whilſt in great Obliquiquities of the Sun, the Angles are very obtuſe; and conſequently the Rays at a greater Diſtance one from another. It muſt, however, be obſerved, that there may be many Effects of the Sun's Rays, and ſuch as participate of the Nature of* Heat, *which are not proportioned to our Senſe of Touch; ſo that with reſpect to us, they produce no Warmth; tho' with reſpect to ſome other Bodies, they may have the Effect of* Heat [n].

A fourth; to the ſecond.

(4.) *Let this Experiment be made: Take a Glaſs, faſhioned in a contrary manner to that of the common Burning-glaſs; and place it between the Hand and Rays of the Sun, in order to obſerve whether it diminiſhes the Sun's Heat, as a Burning-glaſs increaſes it* [o]. *For, 'tis manifeſt, with regard to the Optic Rays, that according as a Glaſs is made of a different Thickneſs, with reſpect to the Middle and the Sides; ſo the Objects ſeen through it appear larger, or more diminiſhed: The Effect ſhould, therefore, be tried in Heat.* The Burning Glaſs.

A fifth; to the ſecond.

(5.) *Let a careful Experiment be made, to ſhew, whether, by the moſt powerful and beſt contrived Burning-glaſs, the Rays of the Moon may be collected ſo as to afford any, the moſt minute degree of Warmth. But if this Warmth ſhould prove too ſubtile and weak to be perceived by the Touch;*

[n] See Mr. *Boyle's Hiſtory of Cold.* Abridgm. *Vol.* I. *p.* 574—584, *&c.*

[o] The Meaning ſeems to be, inſtead of a Lens, or double Convex Glaſs, to try a double Concave.

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Touch; recourſe muſt be had to Thermometers; which ſhew the Heat, or Coldneſs of Air; ſo as to throw the Moon's Rays, by a proper Burning-glaſs, upon the Top of ſuch a Thermometer; and obſerve whether the Height of the included Liquor be altered by the Warmth [p].

A ſixth; to the ſecond.

(6.) *Let a Burning-glaſs be tried, with a Heat that is not luminous, or ſhining; as that of Iron, or Stone, heated, but not ignited; boiling Water, and the like: and obſerve whether the Heat is increaſed, as in Caſe of the Sun's Rays.*

A ſeventh; to the ſecond.

(7.) *Let a Burning-glaſs alſo be tried with common Flame.*

An Eighth; to the third.

Comets and Meteors.

(8.) *If we are diſpoſed to reckon Comets among the Meteors; Comets are not obſerved to have any conſtant or manifeſt Effect in increaſing the Heat of the Seaſons: tho' Droughts have been frequently obſerved to attend them. Bright Gleams of Light, Star-ſhoots, the Opening of the Firmament, and the like, appear oftener in Winter, than in Summer; and principally, during intenſe Cold, attended with Dryneſs; yet Lightning, Corruſcations and Thunder ſeldom happen in the Winter; but uſually in ſultry Seaſons. And thoſe called* Falling Stars, *are commonly thought rather to conſiſt of ſome ſhining, viſcous Matter, ſet on Flame; than to be of any ſtrong, fiery Nature. But this ſhould be farther enquired into* [q].

A ninth; to the fourth.

Corruſcations.

(9.) *There are certain Corruſcations, which afford Light, but burn not: and theſe always happen without Thunder.*

A tenth; to the fifth.

(10.) *Eructations and Eruptions of Flame, are found no leſs in cold Countries, than in hot ones; as in* Iceland *and* Greenland: *and Trees in*

[p] This Experiment was tried by Dr. *Hook*; ſo far as to ſhew, that the Rays of the Moon are neither conſiderably hot nor cold: but the Matter may require to be farther examined, by Means of more accurate Inſtruments. See *Hook*'s *Lectures of Light*, p. 80.

[q] Conſider of the *Aurora Borealis*, and other Appearances of Light in the Heavens.

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in cold Countries are ſometimes more inflammable, pitchy and reſinous, than in hot ones; as the Fir, the Pine, &c. *But in what Situation and Nature of Soil theſe kind of Eruptions uſually happen, has not hitherto been ſo well examined, as to afford a* Negative *to the* Affirmative [r].

An eleventh; to the ſixth.

(11.) *All Flame is conſtantly hot, in a greater or leſs degree; ſo that there is here no* Negative *at all ſubjoined: and yet they ſay that the* Ignis fatuus *has not much Heat; being, perhaps, ſomewhat like the Flame of Spirit of Wine; which is mild and gentle. But that Flame ſeems ſtill milder, which ſome credible and grave Hiſtorians relate to have appeared upon the Heads of Children, without burning or ſinging them; or only gently playing about their Hair. And, 'tis certain, that there has ſometimes been ſeen a Corruſcation, without manifeſt Heat, about a Horſe, ſweating in his Journey, by Night, in clear Weather. And Loaf-Sugar, and other Things hard candied, being broke or ſcraped with a Knife in the dark, yield Light: ſo does Sea-water, forcibly ſtruck in Rowing; and the Froth of the Sea ſtrongly agitated, in a Storm, by Night* [s]. *But as to the Flame which the ancient Mariners call'd* Caſtor *and* Pollux, *and the Moderns term* the Brothers; *what kind of Heat it has, is not ſufficiently known* [t]. Flame.

A twelfth; to the ſeventh.

(12.) *Every Thing ignited to Redneſs, is perpetually hot, tho' without Flame; and to this* Affirmative, *there is no* Negative *ſubjoin'd: but what comes neareſt to a Negative, ſeems to be rotten Wood; which ſhines by Night, without Heat; and the Scales of putrefied Fiſh, which alſo ſhine in the dark, yet are not hot to the Touch; no more than the Body of the Glow-worm, or the* Lucciole *or* Light-fly. Ignition.

A thir-

[r] See the Accounts of Burning Mountains, in the *Philoſophical Tranſactions*, the *Foreign Journals*, Mr. *Boyle's Works*, &c. And obſerve, that, in all *Natural Enquiries*, *Inſtances* of various kinds, both on the negative and affirmative Side, are frequently wanting; or have not been collected, and recorded by Authors. Whence we ſee the Neceſſity of a *Sylva*, or particular Storehouſe of Obſervations, and Experiments, to be uſed as the Materials in building a ſerviceable Philoſophy.

[s] Conſider of the vitreous Phoſphori, or Glaſs rubbed in the dark; the Phoſphorus of Urine, and all the other kinds of Phoſphori; putrefied Fleſh; putrefied Fiſh; Diamonds, &c. See Mr. *Boyle* upon *Phoſphori*, and ſeveral Pieces, to the ſame Purpoſe, in the *Philoſophical Tranſactions*, *French Memoirs*, &c.

[t] See *Vol.* III. *p.* 322, 327, and 489.

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A thirteenth; to the eighth.

Hot Springs. (13.) *'Tis not ſufficiently diſcovered, as to hot Springs, in what Situation and Nature of the Ground they uſually flow; and therefore no* Negative *is here ſubjoined* [u].

A fourteenth; to the ninth.

Hot Liquors. (14.) *A* Negative *of the Nature of Fluidity, is ſubjoin'd to* heated Fluids, *from the Thing itſelf; for there is no tangible Fluid known, that in its own Nature remains conſtantly hot* [w]*: but Heat is ſuperinduced upon it, for a Time only, as an adventitious Nature; ſo that the Things moſt hot, potentially and operatively, as Spirit of Wine, diſtill'd aromatic Oils, Oil of Vitriol,* &c. *tho' they ſoon prove burning, are cold upon the firſt Touch. And the Water of hot Springs being received into a Veſſel, and ſeparated from its Fountain, grows cold; like Water heated by the Fire. 'Tis true, that unctuous Bodies are ſomewhat leſs cold than Water, Silk than Linen,* &c. *But this belongs to the* Tables of the Degrees of Cold [x].

A fifteenth; to the tenth.

Hot Vapours. (15.) *In like manner, a* Negation *of the Nature of Vapour, ſuch as we find it with us, is ſubjoined to hot Vapours: for Exhalations from oily Bodies, tho' eaſily inflammable, are not perceived hot; unleſs newly exhaled from the hot Body.*

A ſixteenth; to the tenth.

Hot Air. (16.) *So likewiſe, a* Negative *of the Nature of Air, is ſubjoined to* hot Air: *for Air is not found hot with us; unleſs it be ſhut up, rubbed, or work'd together, or manifeſtly heated by the Sun, Fire, or other hot Body.*

A ſeventeenth; to the eleventh.

Hot Seaſons. (17.) *Here we ſubjoin a* Negative, *from the Seaſons colder than agrees with the Time of the Year; which Seaſons happen with us upon East*

[u] See *Becher*'s *Phyſica Subterranea*; and *Hoffman*'s Pieces upon *Mineral Waters*.

[w] Therefore, Fluidity is not of the Nature of Heat; or, in other Words, Fluidity is not eſſential to Heat.

[x] See below, *Aph.* 13.

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East and North Winds; as the contrary do upon West and South Winds. So a Tendency to Rain, especially in Winter, attends a warm Season; and a Tendency to Frost, a cold one.

An eighteenth; to the twelfth.

(18.) *Here we subjoin a* Negative, *from the Air included in the same Vaults or Caves, during the Summer. But the Business of included Air should be very carefully examined: for, first, it may be well doubted, what is the Nature of the Air itself, as to Heat and Cold; since it manifestly receives Heat from the Impression of the Celestial Bodies; and Cold, perhaps, from the Expirations of the Earth; and, again, in that called the Middle Region of the Air, from the cold Vapours and Snow: So that no true Judgment can be made of the Nature of the Air, from the Air abroad, and unconfined; but a better when it is shut up. And, here it is necessary to include it in such a Vessel, or Substance, as may neither communicate Heat nor Cold, by its own Nature, to the Air; nor easily receive the Impression of the external Air. Let the Experiment, therefore, be made in an earthen Vessel, well covered with several Leathers, to defend it from the external Air; keeping the Vessel well closed for three or four Days; then opening it, to discover the Alteration, either by the Hand, or a good* Thermometer, *regularly applied* [y]. Subteraneous Air.

A nineteenth; to the thirtieth.

(19.) *There is likewise a Doubt, whether the Warmth in Wool, Furs, Plumage, and the like, proceed from some small Degree of Heat inherent in them, as they grow, or are thrust out by the Animals; or from a certain fat, and unctuous Substance, which is of a Nature congruous to Warmth; or whether, by shutting up, and breaking off the Communication of Air, as in the foregoing Article: for all Air, cut off from the Continuity of the external Air, seems to have something of Warmth. Let the Experiment, therefore, be tried in shaggy Stuffs, made of Linen, not of Wool, Feathers, or Silk; which are animal Excretions. 'Tis likewise to be observed, that all Powders, which manifestly include Air, are less cold than the whole Substance they were* Warmth of Wool, &c.

[y] See Mr. *Boyle's History of Cold*, in init.

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made from: and ſo we imagine, that all Froth, as containing Air, is leſs cold than the Liquor it is compoſed of [z].

A twentieth; to the fourteenth.

All Bodies heatable.

(20.) *This has no* Negative *ſubjoin'd; for there is nothing found among us, whether tangible, or not tangible, which does not conceive Heat, when expoſed to the Fire: tho' the Bodies differ in this, that ſome conceive Heat ſooner, as Oil, Air, and Water; and others ſlower, as Stone and Metal: but this belongs to the* Table of Degrees [a].

A twenty-firſt; to the fifteenth.

Flint and Steel.

(21.) *There is no other* Negative *ſubjoin'd to this* Inſtance, *but to have it well obſerved, that no Sparks are produced by a Flint and Steel, or any hard Subſtance, without ſtriking off ſome ſmall Parts from the Subſtance of the Stone or Metal* [b]; *and that the Attrition of the Air does not produce the Sparks as is commonly imagined; whilſt the Sparks, by the Weight of the ignited Body, rather tend downwards than upwards; and, upon going out, become a kind of fuliginous Matter.*

A twenty-ſecond; to the ſixteenth.

Attrition gives Heat.

(22.) *We judge that no* Negative *is producible to this* Inſtance; *for we find no tangible Body but what manifeſtly grows hot by Attrition: whence the Ancients imagined, that the celeſtial Bodies had no other Means, or Faculty, of growing hot, but by the Attrition of the Air, in their quick and rapid Revolutions. But here it ſhould be farther enquired, whether the Bodies diſcharged out of Engines, as Bullets out of a Gun, do not acquire ſome Degree of Heat, from the Percuſſion; ſo as to be found hot after their Fall* [c]. *But Air, in.*

[a] Here, again, conſult Mr. *Boyle's Hiſtory of Cold*; tho' certain Experiments ſeem ſtill wanting, to give a fuller Information in this Caſe. But we are not here ſo far to regard the Proſecution of the Enquiry itſelf, as to forget that the Thing propoſed is to give an Example of the Method of conducting Enquiries: tho' the Author has all along contrived to carry on the Enquiries themſelves, at the ſame Time that he gives Examples.

[a] See below, *Aph.* 13.

[b] See Dr. *Hook's Micrographia.*

[c] The Heat of a leaden Bullet, diſcharg'd barely by the Force of the Air, out of a Wind-Gun, againſt a metalline Plate, ſo as to become conſiderably flatted, has been found

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in Motion, cools more than it heats; as appears from Winds, Bellows, &c. For this Motion is not ſo rapid as to excite Heat; and is a Motion of the Whole, not of the Particles: whence 'tis no wonder it ſhould not generate Heat.

A twenty-third; to the ſeventeenth.

(23.) *This* Inſtance *ſhould be diligently enquired into; for all* Herbs heating. *Herbs, and green and moiſt Vegetables, ſeem to contain ſome ſecret Heat; tho' ſo ſmall, as to be imperceptible to the Touch in ſmall Portions: but when many are join'd, and cloſe ſhut up together, ſo that their Spirit cannot breath out into the Air, but the Parts muſt mutually foment and cheriſh each other; a manifeſt Heat is produced; and ſometimes a Flame, if the Matter be diſpoſed thereto* [d].

A twenty-fourth; to the eighteenth.

(24.) *This* Inſtance *alſo ſhould be carefully examined: for Quicklime ſeems to conceive Heat, when Water is thrown upon it; either by the uniting of the Heat, which was before ſcattered; as in the Caſe of confined Vegetables, juſt now mentioned; or becauſe the fiery Spirit is irritated, or exaſperated, by the Water, ſo as to make a Conflict and Struggle. This Matter might be eaſily determined, by uſing Oil inſtead of Water; becauſe Oil would ſerve, as well as Water, to unite, but not to irritate, the included Spirit. The Experiment alſo ſhould be extended, as well to the Aſhes and the Calxes of different Bodies, as to the Uſe of different Liquors* [e]. Quicklime ſlaked.

A twenty-fifth; to the nineteenth.

25. *This* Inſtance *has the* Negative *of all other Metals; which are more ſoft and yielding: thus Gold diſſolved in* Aqua Regia, *Lead in* Aqua Fortis, *and Quickſilver in* Aqua Regia, *afford little Heat to the Touch, in the Act of Solution* [f]: *but Silver, and Copper, afford* Metals in Solution.

found ſo great, as to burn the Fingers, when taken up directly. But it is not certain, that Bullets acquire Heat, barely by moving through the Air. This might be commodiouſly tried with a Wind-Gun, and a proper Inſtrument for diſcovering a ſmall Degree of Heat.

[d] See above, *Tab.* I. §. (17.)

[e] See Mr. *Boyle's Works*, paſſim; and the *Medicinal Uſe of Lime-Water*, in the *French Memoirs*, An. 1700.

[f] See the *Hiſtory of Condenſation* and *Rarifaction*, Vol. III. Sect. VIII. p. 554, 555.

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more; Tin ſtill more; and Iron the moſt of all: and in the two latter, beſides a ſtrong Heat, there is alſo excited a violent Ebullition in the Diſſolution. Whence the Heat ſeems to proceed from the Conflict; whilſt the acid Spirits enter, force into, ſeparate, and divide the Parts of the reſiſting Body: but where the Body yields eaſily, there is little Heat produced [g].

A twenty-ſixth; to the twentieth.

Heat of Animals. (26.) *To the Heat of Animals, we annex no* Negative; *except that of* Inſects, *as was before obſerved* [h], *on account of the Smallneſs of their Bodies. For Fiſh, compared with Land Animals, have rather a Degree of Heat, than a Privation. But in Vegetables and Plants there is no Degree of Heat perceptible to the Touch; neither in their Tears, nor in their medullary Parts, newly laid open. In Animals there is found a great Diverſity of Heat, not only in their Parts (as the Heat of the Heart differs from that of the Brain; and this again from that of the external Parts;) but alſo with regard to Accidents; as in violent Exerciſe, Fevers,* &c.

A twenty-ſeventh; to the twenty-firſt.

Heat of Excrements. (27.) *A* Negative *can ſcarce be ſubjoined to this* Inſtance; *ſince even the ſtale Excrements of Animals have a manifeſt potential Heat; as we ſee in the manuring of Land.*

A twenty-eighth; to the twenty-ſecond, and twenty-third.

Heat of *Menſtruums.* (28.) *Such Liquors, whether aqueous or oleaginous, as have a great and powerful Acrimony, produce the Effects of Heat, in the Separation and Burning of Bodies, after ſome Time; tho' at firſt ſuch Liquors were not hot to the Touch. And theſe Liquors operate according to the Pores of the Body, whereto they are applied;* for Aqua Regia *diſſolves Gold, and not Silver;* Aqua Fortis *diſſolves Silver, and not Gold; but neither of them diſſolves Glaſs: and ſo of Liquors* [i].

A twenty-

[g] The other Solutions and Mixtures, wherein Heat is generated, might alſo be produced as Inſtances to the preſent Purpoſe. See the Chapter of *Fire*, in *Boerhaave's Chemiſtry*.

[h] See above, *Tab.* I. §. (20.)

[i] See the Chapter of *Menſtruums*, in *Boerhaave's Chemiſtry*.

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A twenty-ninth; to the twenty-fourth.

(29.) *Let Trial be made of Spirit of Wine upon Wood, Butter, Wax, or Pitch; whether, by its Heat, it will, in ſome degree, diſſolve them: for the* twenty-fourth Inſtance *ſhews, that Spirit of Wine has a Power reſembling that of Heat, in Scorching; and therefore, let the Experiment be made alſo in Liquefaction. Let Trial likewiſe be made by a Water-Thermometer, with a Hollow in the Top, on the outſide; and pour high rectified Spirit of Wine into that Hollow; then cover it, the better to keep in the Heat; and obſerve whether it makes the Water fall or riſe* [k]. Spirit of Wine.

A thirtieth; to the twenty-fifth.

(30.) *Spices, and Plants that prove acrimonious to the Palate, are found much hotter when taken internally: let it therefore be conſidered in what other reſpects they may have the Effect of Heat. 'Tis related by Sailors, that when large Parcels of Spices, which have been long kept cloſe confin'd, come to be opened, thoſe who firſt take them out, run the hazard of catching Fevers, and Inflammations of the Spirits. Trial, therefore, might be made whether the Powders of ſuch Spices and Herbs would not, like the Smoak of a Fire, dry Bacon or Fiſh hung over them.* Aromatics.

A thirty-firſt; to the twenty-ſixth.

(31.) *There is an Acrimony or Pugency both in cold Things, ſuch as Vinegar and Oil of Vitriol; and in thoſe potentially hot, ſuch as Oil of Origanum,* &c. *whence they both alike cauſe Pain in animate Bodies; and ſeparate and conſume the Parts in ſuch as are inanimate. Nor is any* Negative *annexed to this* Inſtance. *But there is no Pain in Animals, without a certain Senſation of Heat.* Cold Things.

A thirty-ſecond; to the twenty-ſeventh.

(32.) *There are many Actions in common to Heat and Cold, tho' they differ greatly in the Manner. Thus Snow ſeems to burn ſoon after it is handled; Cold preſerves Fleſh from Putrefaction, as well* Some Actions common to *Heat* and *Cold.*

[k] See the Chapter of *Fire*, in *Boerhaave's Chemiſtry.*

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well as the Fire; and Heat makes ſome Bodies ſhrink, as well as Cold. But 'tis more proper to refer theſe and the like Inſtances *to the* Enquiry about Cold [l].

Aphorism XIII.

A third Table *to be formed.*

26. In the *third* Place, thoſe *Inſtances* muſt be brought before the Underſtanding, in which the Nature enquired after reſides, according to the Degree of more or leſs; whether the Compariſon of Increaſe and Decreaſe be made in the ſame Subject, or reſpectively in different Subjects: for as the *Form* of a Thing, is the very Thing itſelf; or as a Thing differs not from the *Form*, otherwiſe than Appearance does from Exiſtence, External from Internal, or with reſpect to Man, and with reſpect to the Univerſe [m]; it follows, that no Nature ſhould be received as a true *Form*, unleſs it perpetually decreaſe when the Nature decreaſes; and perpetually increaſe when the Nature increaſes. The *Table* repreſenting this, we therefore, call the Table of Degrees, or the *Table of Compariſon.*

The comparative Degrees of Heat.

27. We ſhall firſt, therefore, conſider ſuch Things, as to the Touch ſhew no Degree of Heat at all; but ſeem only to have a certain *potential Heat*, or a Diſpoſition and Preparation towards actual Heat: and next proceed to ſuch as are *actually* hot, or hot to the Touch; and obſerve their different Strengths, or Degrees.

TABLE III.

A Table of the Degrees of Heat.

No Matter hot in itſelf.

(1.) *Among all the ſolid and tangible Bodies, there is nothing found originally hot, in its own Nature; no Stone, Metal, Sulphur, or other Foſſil; no Wood, Water, or animal Carcaſs: for the Water of hot Wells ſeems to be heated accidentally, either by Flame, or ſubteraneous Fire, ſuch as is thrown up by* Ætna, *and many other burning Mountains; or elſe by the Conflict of Bodies; as Heat is produced*

[l] See Mr. *Boyle's Hiſtory of Cold.*

[m] Theſe Expreſſions may give us a fuller Information, as to what the Author means by *Forms.*

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produced in the Diſſolutions of Iron or Tin [n]. *Therefore to the human Touch, there is no degree of Heat in* inanimate Bodies. *And thoſe we have mentioned alſo differ in degree of Heat; for Wood is not ſo cold as Iron. But this belongs to the* Table of Degrees, for the Hiſtory of Cold.

(2.) *But for potential Heats and Diſpoſitions to Flame, there are numerous inanimate Bodies found greatly diſpoſed thereto; ſuch as* Sulphur, Naphtha, *and* Petreol. Potential Heats.

(3.) *The Bodies that are previouſly heated, as Horſe-dung in the Animal, Quick-lime, and perhaps Aſhes or Soot, by the Fire; retain ſome ſecret Remains of their former Heat: whence certain Digeſtions, Diſtillations and Separations are made of Bodies by burying them in Horſe-dung; and thus Heat is excited in Quick-lime, by throwing Water upon it, as was above obſerved* [o].

(4.) *Among Vegetables there is no Plant, or part of a Plant, whether the excreted Tear, or internal Pitch, found hot to the human Touch: but green Plants, as above inſtanced, become hot by Preſſure; and ſome Vegetables are found hot, others cold, to the* internal Touch, *viz. to the Palate or Stomach, or even to the external Parts, after continuing applied for ſome time; as we ſee in Plaiſters and Unguents* [p].

(5.) *There is nothing found hot to the human Touch in the Parts of Animals after Death, or after Separation from the Body. Even Horſe-dung retains not its Heat, unleſs it be preſs'd together and buried; yet all Dung ſeems to have a potential Heat, as appears from Compoſts and Manuring. In like manner, the Carcaſſes of Animals have a latent and potential Heat; inſomuch that in the Church-yards where Burials are frequent, the Earth collects a certain Heat, which conſumes a Carcaſs newly laid in it, much ſooner than mere Earth* [q]. *And 'tis reported that the People of the* Eaſt *have a certain fine, ſoft Cloth, made of Birds Feathers, which by its native Heat will diſſolve Butter, gently wrapt up therein* [r].

(6.) *Thoſe*

[n] See above, *Tab.* II. §. (26.) Conſider alſo of the ſpontaneous Heating of Marcaſites with Water; Iron Filings and Sulphur, moiſten'd with Water; and other Inſtances of this Nature.

[o] *Tab.* I. §. (18.) and *Tab.* II. §. (24.)

[p] Thus the *Emp. Epiſpaſtic. Emp. Stomachic. magiſtral. Emp. è Cymino. Ung. Martiat. Ung. Maſtichin.* &c. are heating; and *Emp. de Ranis cum Mercurio, Emp. è Cicuta; Ung. Nutritum, Ung. Populnæum,* &c. are cooling.

[q] Is the Fact ſufficiently verified?

[r] This may require farther Confirmation.

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(6.) *Thoſe Things that mend Land, ſuch as Dungs of all ſorts* [s], *Chalk, Sea-ſand, Salt,* &c. *have ſome Diſpoſition to Heat* [t].

Putrefaction attended with a latent Heat.

(7.) *All Putrefaction is attended with ſome ſmall Tendency to Heat; tho' not ſo much as to be perceived by the Touch* [u]: *for neither thoſe Things, which when putrefied, turn to Animals, as Fleſh, Cheeſe,* &c. *are found hot to the Touch; nor rotten Wood that ſhines in the dark: but Heat ſometimes diſcovers itſelf in Putrefactions, by highly fetid and abominable Odours* [w].

The firſt Degree of Heat, that of *Animals.*

(8.) *The* firſt degree of Heat, *therefore, of thoſe Things which feel hot to the human Touch, ſeems to be that of Animals; which has no very great Extent in its Degrees: for the loweſt, as in Inſects, is ſcarce perceptible to the Touch; and the higheſt ſcarce equals the Heat of the Sun, in hot Countries and Seaſons; nor is it ſo great but the Hand may endure it: tho' 'tis related of* Conſtantius *and ſome others, of a very dry Habit of Body, that they have been ſo hot in acute Fevers, as in a manner to burn the Hand applied to them* [x].

Different Heats of Animals.

(9.) *Animals have their Heat increaſed by Motion, Exerciſe, Wine, high Feeding, Venery, burning Fevers, and by Pain.*

(10.) *Men in the Fits of an Intermitting Fever, are firſt ſeized with Cold and Shivering; and ſoon after grow very hot: but they continue hot from the beginning, in burning and peſtilential Fevers.*

(11.) *Let farther Enquiry be made of the comparative Heat in different Animals; as Fiſh, Quadrupeds, Serpents and Birds: and again, in their different Species; as in Man, the Lion, the Kite,* &c. *for according to common Opinion, Fiſh have little Heat in their inward Parts; but Birds a great deal; eſpecially Pigeons, Hawks and Eſtriches.*

(12.) *Farther*

[s] Except that of Geeſe, according to vulgar Obſervation.

[t] But is this Diſpoſition greater than that of many Things which do not mend Land? And, in this Light, what is to be ſaid of Nitre?

[u] Nor, as is ſaid, by a Thermometer, applied to a putrefying animal Carcaſs; tho' this may require to be more exactly tried.

[w] The Argument ſeems concluſive; for Odours, perhaps, cannot exiſt without a certain Degree of Heat. See *Boerhaave's Chemiſtry*, under the Chapter of *Fire*; and the *Proceſs of Putrefaction*. See alſo Mr. *Boyle's Works*, paſſim.

[x] This ſeems to be no unfrequent Caſe; when inflammatory Fevers happen in robuſt and ſanguine Conſtitutions; if by burning the Hand, be meant a diſagreeable, or ſomewhat painful Senſation of Heat.

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(12.) *Farther Enquiry ſhould likewiſe be made, as to the comparative Heat of the ſame Animal, in its different Parts and Limbs; for Milk, Blood, Sperm, and Eggs, are found moderately tepid, or leſs hot than the outward Fleſh of the Creature upon Exerciſe, or when moved, or excited; but it has not hitherto been examined what the Degree of Heat is in the Brain, Stomach, Heart,* &c. And different Parts of the ſame Animals.

(13.) *All Animals are externally cold in the Winter, and cold Seaſons; but are then thought to be hotter within* [y].

(14.) *The Heat of the celeſtial Bodies, even in the hotteſt Countries, and hotteſt Times of the Year and Day, is not able to fire the drieſt Wood, Straw, or Tinder; unleſs ſtrengthen'd by the Burning Glaſs: tho it may raiſe a Vapour from moiſt Matters* [z]. The Heat of the celeſtial Bodies.

(15.) *According to the Tradition of Aſtronomers, ſome Stars are more, and others leſs hot. Among the Planets,* Mars *is ſaid to be the hotteſt, or next to the Sun; then* Jupiter; *and then* Venus: *but the* Moon *is ſuppoſed to be cold; and* Saturn *the coldeſt Planet of all. Among the Fixed Stars,* Sirius *is ſuppoſed the hotteſt; then* Cor Leonis; *then the leſſer* Dog-Star, *&c.*

(16.) *The Sun proves hotter to us, the nearer he comes to the Perpendicular, or Zenith; and the ſame is to be underſtood of the Planets, according to their different Degrees of Heat. For Example,* Jupiter *proves much hotter to us when he is in* Cancer *or* Leo, *than when in* Capricorn *or* Aquarius.

(17.) *'Tis to be ſuppoſed that the Sun, and all the Planets heat more in their* Perigeè, *when they are neareſt the Earth, than in their* Apogeè, *when they are fartheſt from it: but where-ever the Sun is at the ſame time both in its* Perigeè, *and neareſt the Zenith, it muſt neceſſarily be hotter, than where the Sun is in its* Perigeè, *but farther diſtant from the Zenith. So that the comparative Aſcenſions of the Planets muſt be here regarded, as they approach to, or recede from the Perpendicular, in different Countries.*

(18.) *The Sun and Planets are ſuppoſed hotter in their Appulſe to the larger Fixed Stars. So when the Sun is in* Leo, *'tis nearer the* Cor Leonis, *the* Cauda Leonis, Spica Virginis, Sirius *and* Canicula, *than when in* Cancer; *where yet it is nearer the Zenith. And*

[y] Suppoſe, by what is called *Antiperiſtaſis*; but this does not, perhaps, appear by the Thermometer. See Mr. *Boyle's Hiſtory of Cold*; and Dr. *Boerhaave's Chemiſtry*; under the Chapter of *Fire*.

[z] The direct Rays of the Sun are ſaid to be capable of melting Lead, in certain Climates; or even to fire the Houſes. See *Boyle, Abridgm.* Vol. III. p. 55, *&c.*

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'tis to be ſuppoſed that thoſe Parts of the Heavens give the greateſt Heat, tho' not perceptible to the Touch, that are fulleſt of Stars, eſpecially Stars of the firſt Magnitude.

How increaſed. (19.) *The Heat of the Celeſtial Bodies is increaſed three Ways*; viz. (1.) *by their Perpendicularity*; (2.) *their Nearneſs of Approach, or Perigee*; *and* (3.) *by the Stars lying thick together.*

A Difference in Degree betwixt the milder Heats. (20.) *There is a very great Difference found between the Degree of Heat in Animals, and that of the Celeſtial Bodies, as it affects us, on the one ſide*; *and the mildeſt Flame, all ignited Bodies, or even Liquors, and the Air itſelf, much heated by the Fire, on the other: for the Flame of Spirit of Wine, even tho' diffuſed and uncollected, is able to burn Straw, Linen, or Paper*; *which animal Heat will not do*; *nor ſolar Heat, without the Aſſiſtance of the Burning-Glaſs.*

The Degrees of Heat indicated. (21.) *But there are numerous Degrees of Strength and Weakneſs of Heat, in Flame, and Bodies ignited*; *tho' as no careful Enquiry has been made about them, we are obliged to paſs them lightly over.* (1.) *The Flame of Spirit of Wine ſeems to be the ſofteſt*; *unleſs we except the* Ignes Fatui, *and the Corruſcations of ſweating Animals.* (2.) *The Flame of Spirit of Wine, we judge, is ſucceeded by the Flame of porous and ſpongy Vegetables*; *as Straw, Ruſhes, and dried Leaves*; *from which the Flame of Hair or Feathers does not greatly differ.* (3.) *Next to this, perhaps, may follow the Flame of Wood*; *eſpecially of ſuch as abounds not in Roſin or Pitch: but the Flame of Bruſh-Wood, or Twigs, (which are commonly bound up into Faggots,) is more gentle than that yielded by the Trunks and Roots of Trees*; *as is found by Experience, in the Furnace for melting Iron from the Stone*; *where ſmall Wood is of little Service.* (4.) *Next to this comes, in our Eſtimation, the Flame of Oil, Tallow, Wax, and the like unctuous and fat Bodies*; *which have no great Acrimony.* (5.) *But a ſtronger Heat is found in Pitch and Roſin. And,* (6.) *a ſtill ſtronger in Sulphur, Camphire, Naphtha, Petreol, and Salts, after their crude Matter is diſcharged*; *and in the Compoſitions hereof*; *as in Gun-powder, and Wild-fire of different Kinds*; *which have ſo ſtubborn a Heat, that Water can hardly extinguiſh it.*

Metallic Flames. (22.) (7.) *We ſuppoſe alſo, that the Flame ariſing from certain Kinds of imperfect Metals is exceeding ſtrong and ſharp*[a]; *but of this a farther Enquiry ſhould be made.*

(23.) (8.) *The*

[a] As in making the common *Regulus of Antimony*; *Prince's Metal*, with *Zink and Copper*; and many other metallurgical Experiments.

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(23.) (8.) *The Flame of ſtrong Lightning ſeems to exceed all the former; ſo as ſometimes to melt perfect Iron itſelf, into Drops; which thoſe other Flames cannot do.* Lightning.

(24.) (9.) *There are alſo different Degrees of Heat in Bodies ignited; tho' theſe likewiſe have not hitherto been diligently enquired into. The weakeſt Heat of this kind we take to be,* (1.) *that of Tinder; and the Match uſed in the firing of great Guns; after which come* (2.) *ignited Char-Coal, Pit-Coal, Brick,* &c. *but,* (3.) *the hotteſt of all ignited Bodies ſeem to be Metals; as, Copper, Iron,* &c. *tho' farther Enquiry ſhould be made about them.* The Degrees of Heat in ignited Bodies.

(25.) *Some ignited Bodies are found much hotter than ſome Flames: for ignited Iron is much more hot and burning, than the Flame of Spirit of Wine.* Ignited Bodies compared with Flames.

(26.) *There are alſo ſome Bodies, which, tho' un-ignited, and only heated by the Fire; ſuch as boiling Water, and Air pent up in Reverberatory Furnaces; are hotter than many Flames, and Bodies ignited.*

(27.) *Motion increaſes* Heat; *as appears by Bellows and Blow-pipes; inſomuch that the harder Metals will not melt in a dead, or ſtill Fire, that is not animated by the Blaſt.* Heat increaſed by Motion.

(28.) *Let Trial be made with the Burning-glaſs: for, as I remember, if the Glaſs be held, for Example, at the Diſtance of ten Inches from a combuſtible Body, it will not then burn ſo much, as if it be firſt placed at the Diſtance of five Inches; and then be gradually and ſlowly drawn away to the Diſtance of ten; tho' the Collection and Cone of Rays remain the ſame: the bare Motion thus increaſing the Effect of the Heat.*

(29.) *Thoſe Conflagrations which happen in the Time of a ſtrong Wind, are thought to advance faſter towards the Wind, than from it: becauſe the Flame recoils ſwifter when the Wind ſlackens, than it advances forwards when the Wind drives it.* Conflagrations ſtrongeſt againſt the Wind.

(30.) *Flame proves ſtrong, vigorous, and generative, only when it finds ſome Cavity wherein to move, and play, and exert itſelf; except the flatulent Flame of Gun-powder, and the like; where Compreſſion and Confinement increaſe its Force.* Strong Flame requires a Cavity, or Confinement.

(31.) *The Anvil grows very hot by the repeated Strokes of the Hammer; ſo that if it were thin, we judge it might be ignited by ſtrong and ſucceſſive Strokes: but this remains to be tried* [b]. Iron heated by the Hammer.

[b] 'Tis certain, that a Piece of Iron has, by various Strokes of the Hammer, nimbly repeated, been ſoon made to appear red hot; inſomuch, that this is ſometimes accounted no bad Expedient for lighting a Fire, among Nailors, and thoſe Workers in Iron who uſe a quick Hammer. See Dr. *Hook*'s *Lectures of Light*, p. 117.

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Fire extinguiſhed by ſtrong Compreſſion.

(32.) *But in ſuch ignited Bodies as are porous, and afford Space enough for the Fire to move in; if the Fire's Motion be curbed by a ſtrong Compreſſion, the Fire is immediately extinguiſhed: as when Tinder, or the burning Wieck of a Lamp, a flaming Coal,* &c. *is ſqueezed by the Foot, or the like; upon which the Effects of the Fire preſently ceaſe.*

Heat increaſed by Approach.

(33.) *The Approach of a hot Body increaſes* Heat, *according to the Degree of Nearneſs; and the Caſe is the ſame in Light: for the nearer an Object is placed to the Light, the more viſible it becomes.*

By Union.

(34.) *The uniting of different* Heats *increaſes* Heat; *unleſs the Bodies come to be mixed: for a great Fire and a ſmall one being near each other, ſomewhat increaſe each others* Heat: *but warm Water put into boiling Water, cools it.*

By Continuance.

(35.) *The Continuance of Heat in a Body, increaſes* Heat: *For Heat, thus perpetually flying off, is mixed with the Heat before exiſting; ſo as to multiply the Heat. Thus a Fire kept up for half an Hour, does not heat the Room ſo much, as if the ſame Fire were kept up for an Hour. But this is not the Caſe in Light; for a Lamp does not enlighten a Room more, by long continuing to burn, than when it is firſt lighted.*

By Cold.

(36.) *External Cold increaſes* Heat: *for we find that Fire ſcorches violently in froſty Weather. This, we conceive, happens not only from the Heat being ſhut up and contracted, which is a kind of Union* [c]; *but alſo by Irritation. Thus when the Air, or any elaſtic Body, is violently compreſſed or bent; it recoils not only to the Point it was forced from, but beyond it. Therefore let careful Trial be made, by placing ſome combuſtible Material in Flame, to ſhew whether it will not be burnt ſooner on the Surface, than in the midſt of the Flame* [d].

The Degrees of Reception of Heat.

(37.) *There are many Degrees in the Reception of* Heat. *And* firſt *it is to be obſerved, how ſmall and ſlender a* Heat *may ſomewhat change, and a little warm thoſe Bodies which are leaſt of all ſuſceptible of* Heat. *For the Heat of the Hand will warm a Bullet of Lead, or any other Metal, held for a while in it: ſo eaſily, and in all Caſes, is Heat tranſmitted, and excited; tho' the Body, to Appearance, ſeems no way changed.*

In Air.

(38.) *But of all Bodies that we know,* Air *the eaſieſt receives and communicates Heat; as appears by* Weather-Glaſſes; *which are made thus. Take a bellied Glaſs, with a long and ſlender Stem; and invert the*

Weather-Glaſſes, how made.

[c] See above, §. (34.)

[d] See Dr. *Hook's Lectures of Light*; and *Diſcourſe of Comets*. See alſo hereafter, *Aph.* 20.

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the Nib of it into another glaſs Veſſel of Water; ſo that the Aperture of the firſt Glaſs may touch the bottom of the ſecond; whilſt the Stem is ſupported a little by the Mouth of the under Glaſs, ſo as to ſtand, without having its Orifice entirely cloſed. And the better to effect this, apply ſome Wax to the Mouth of the under receiving Glaſs; but ſo as not to ſtop this up neither. Before the bellied Glaſs is inverted into the other, let its Belly be heated at the Fire; and when placed, as abovementioned, the Air which was dilated by the heating, will contract itſelf (after the adventitious Heat is gone) to an equal Dimenſion with that of the external or common Air, at the Time; and raiſe the Water upwards in the ſame Proportion. And now, when a Scale of Degrees, made upon a long Slip of Paper, is paſted along the Stem; according as the Weather grows hotter or colder, the included Air will contract with the Cold, and expand with the Heat; and ſhew the Effect; by the Aſcent of the Water, when the Air is contracted; and by the Deſcent thereof, when the Air is expanded. But the Senſibility of the Air, in reſpect of Heat *and* Cold, *is ſo ſubtile and exquiſite, as far to exceed the Perception of the human Touch; inſomuch, that a Ray of the Sun, or the Warmth of a Man's Breath, much more the Heat of one's Hand, placed upon the Top of the Glaſs, will immediately cauſe the Water manifeſtly to ſink*[e]. *Tho' we conceive that the Spirit of Animals has a ſtill more exquiſite Senſe of* Heat *and* Cold; *unleſs it be obſtructed and blunted by the groſſer Matter of their Bodies.*

(39.) *Next to* Air, *we judge thoſe Bodies to be moſt ſenſible of* Heat, *which are newly changed, and compreſſed, by Cold; ſuch as* (1.) *Snow and Ice: for theſe begin to relent and diſſolve with any gentle Heat.* (2.) *After theſe, perhaps comes Quickſilver: After this comes* (3.) *fat Bodies; ſuch as Oil, Butter,* &c. (4.) *Wood*; (5.) *Water*; (6.) *and laſtly, Stones and Metals: which do not eaſily heat, eſpecially within; tho' they very long retain the Heat they have once received; ſo that a red-hot Brick, Stone, or piece of Iron, quenched in a Baſon of cold Water, retain ſuch a Heat, for ſome Minutes after, that they cannot be handled.* The Scale of Bodies moſt ſuſceptible of *Heat* and *Cold.*

(40.) *The leſs Bulk a Body is of, the ſooner it conceives Heat, by the approach of a hot Subſtance: which ſhews that all Heat with us is in a manner averſe to tangible Bodies*[f]. Heat averſe to tangible Bodies.

(41.) Heat

[e] For the Improvement of Thermometers, ſee Mr. *Boyle's Hiſtory of Cold*; and Dr. *Hook's Works*, paſſim. See alſo Dr. *Boerhaave's Chemiſtry.*

[f] As being readieſt communicated in the ſmalleſt, and perhaps the moſt rarified Bodies.

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(41.) Heat, *to the Senſe and human Touch, is an undetermin'd, relative Thing; ſo that warm Water ſhall ſeem hot to a cold Hand; and cold, if the Hand be hot* [c].

[c] See Mr. *Boyle's Hiſtory of Cold*, in init.

Aphorism XIV.

Natural Hiſtory defective.

28. How unprovided we, at preſent, are in *Natural* and *Experimental Hiſtory*, may be eaſily obſerved from hence; that in the preceding *Tables* we are frequently obliged to direct Experiments, and farther Enquiry to be made into Particulars; and that inſtead of *approved Hiſtory*, and ſuch *Inſtances* as may be depended upon, we are ſometimes driven to inſert *Traditions* and *Relations*; tho' we do this always with a manifeſt doubting of their Truth and Authority [a].

Aphorism XV.

Uſe of the preceding Tables.

29. The Office and Uſe of theſe three *Tables*, is, to preſent a *View of Inſtances to the Underſtanding*. And when this *View* is procured, the Buſineſs of *Induction* is to be put in Practice. For, upon a particular and general View of all the *Inſtances*, ſuch a Nature is to be diſcovered, as may be continually preſent, or abſent, and always increaſe and decreaſe, with that Nature; and, as we above laid down, limit the more common Nature [b]. But if the Mind ſhould attempt to do this affirmatively from the firſt, as it uſes to do when left to itſelf, there preſently riſe up Phantoms and notional Hypotheſes, ill defined; and Axioms that daily require a mending-hand; unleſs, after the Cuſtom of the Schools, we would contend for Falſehood: tho' doubtleſs theſe Axioms would be better or worſe, according to the Powers and Strength of the Underſtanding that formed them. God, the great Giver and Creator of *Forms*, doubtleſs, knows them, by immediate Affirmation, at the firſt Glance of the Underſtanding; and ſo, perhaps, may Angels, and ſuch ſublime Intelligences: but this far exceeds the human Capacity; which can only firſt proceed by Negatives, and laſtly, after a perfect Excluſion, end in Affirmatives.

Forms *known intuitively to ſublime Intelligences.*

Aphorism XVI.

The Buſineſs of genuine Induction.

30. We muſt, therefore, make a perfect Reſolution and Separation of Nature, not by Fire, but by the Mind; which is, as it were, the divine Fire.

[a] Little Progreſs can be expected in *Philoſophy*, and the *Sciences*, till an ample and exact *Hiſtory of Nature and Art* is procured; out of which, as out of a Storehouſe, Particulars ſhould be drawn, as they come to be wanted, in all Enquiries.

[b] See above, *Part* II. *Aph.* 4.

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Fire. And thus the firſt *Work of genuine Induction*, in the Diſcovery of *Forms*, is to throw out, or exclude, ſuch particular Natures, as are not found in any *Inſtance*, where the given *Nature* is preſent: or ſuch as are found in any *Inſtance*, where that *Nature* is abſent: and again, ſuch are found to increaſe in any *Inſtance*, when the given Nature decreaſes; or to decreaſe when that Nature increaſes. And then, after this Rejection and Excluſion is duly made, the affirmative, ſolid, true, and well defined *Form*, will remain as the Reſult of the Operation; whilſt the volatile Opinions go off in *Fume*[c]. And this is eaſily expreſſed in Words; but the Thing itſelf cannot be come at, without numerous Turnings and Windings. We will, however, endeavour not to omit any one Step that conduces to the End.

APHORISM XVII.

31. But here a general Caution, or *perpetual Admonition*, muſt be given; leſt, as we ſeem to attribute ſo much to *Forms*, what we ſay of them ſhould be underſtood of ſuch *Forms*, as Men have hitherto accuſtomed themſelves to conſider[d]. *The Notion of Forms, limited.*

32. For, (1.) we do not at preſent ſpeak of compound *Forms*, that is, Combinations of ſimple Natures, according to the common Courſe of the Univerſe; as the *Form* of an Eagle, a Lion, a Roſe, Gold, *&c.* the Time of treating which will be, when we come to *conceal'd Proceſſes* and *ſecret Textures*; and the Diſcovery of them, as they are found in thoſe call'd Subſtances, or concrete Natures[e]. *Theſe Forms ſimple.*

33. (2.) And even in the Caſe of ſimple Natures, we muſt not be underſtood to mean any abſtract *Forms*, or Ideas, that are either undetermined, or ill determined in Matter. For when we ſpeak of *Forms*, we mean no other than *thoſe Laws and Determinations of pure Action, which regulate and conſtitute any ſimple Nature; as Heat, Light, and Gravity; in all Kinds of Matter, and Subjects, ſuſceptible thereof: and therefore* the *Form of Heat*, or the *Form of Light*, is the ſame Thing as the *Law of Heat*, or the *Law of Light:* for we perpetually keep cloſe to Practice, and Things themſelves[f]; and therefore when we ſay, for Example, in the Enquiry *Not ideal.*

[c] The Metaphor ſeems taken from the Operation of Teſting, or the Way of Refining, or Aſſaying Gold and Silver Ores, with Lead; which very appoſitely illuſtrates this Method of *Induction:* the Lead, ſome way or other, carrying off with it, whatever is volatile, or vitrifiable, and not true Gold or Silver. For thus, the proper Sett of *Inſtances* being procured, (like an Ore, wherein the nobler Metals are contained,) they are tried by *Induction*, as in the Furnace; ſo as to leave the true *Form* behind, like a Brill of Gold or Silver, upon the Teſt.

[d] *Viz.* The Peripatetic, or notional *Forms*, &c.

[e] See *de Augment. Scientiar.* p. 84.

[f] Certainly this Caution has not been ſufficiently obſerved; whence many have conceived this *Second Part* of the *Novum Organum* to be rather a deep, or, according to the vulgar Expreſſion, a metaphyſical Speculation, than a Thing directly tending to Operation; or, what it is in reality, with regard to the Mind, *Practice itſelf.*

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Enquiry into the Form of Heat, *reject Tenuity*[g], *or Tenuity is not of the Form of Heat*; 'tis the ſame as if we ſaid, *Men may ſuperinduce Heat, upon a denſe Body*; or, on the other hand, that *Men may take away Heat from a rare one*[h].

Nor too abſtracted.

34. (3.) And if any one ſhall think that our *Forms* have ſomewhat abſtracted in them, becauſe they appear to mix and join together Things that are heterogeneous; as the Heat of the Celeſtial Bodies, and the Heat of Fire; the fixed Redneſs of a Roſe, and the apparent Redneſs of the Rainbow, the Opal, or the Diamond; Death by Drowning, and Death by Burning, Stabbing, the Apoplexy, Conſumption, *&c.* which, tho' very diſſimilar, we make to agree in the Nature of Heat, Redneſs, Death, *&c.* he muſt remember, that his own Underſtanding is held and detained by Cuſtom, Things in the groſs, and Opinions. For, it is certain, that the Things abovementioned, however heterogeneous and foreign they may ſeem, agree in the *Form*, or *Law*, that ordains *Heat*, *Redneſs*, and *Death*. Nor can the human Power be otherwiſe freed, and ſet at Liberty from the common Courſe of Nature, and extended and exalted to new Efficients, and new Ways of working, than by diſcloſing and inveſtigating this Kind of *Forms*. But after treating of this *Unity of Nature*[i], which is a moſt capital Thing; we ſhall proceed to the true Diviſions and Paths of Nature, as well the ordinary as internal[k].

Aphorism XVIII.

The Excluſion, or Rejection of Natures, not belonging to the Form of Heat.

35. But we are next to propoſe an *Example of the Excluſion or Rejection of thoſe Natures*, which by the *Tables of View*, are found not to be *of the Form of Heat*; admoniſhing, by the way, that not only each *Table* ſuffices for the Rejection of any Nature; but alſo every ſingle Inſtance, contained in each Table: for it is manifeſt, from what goes before[l], that any one contradictory Inſtance deſtroys the Notion of *Form*. However, for Clearneſs ſake, we ſometimes double or repeat the Excluſion; the better to demonſtrate the Uſe of the *Tables*.

[g] See below, *Table* IV. §. 8.

[h] It cannot be too well remember'd, nor, perhaps, ſufficiently inculcated, that *Theory* and *Practice*, in the Mind, are but one and the ſame Thing; or differ no more, in any reſpect, than as Cauſe and Effect, or Rule and Work.

[i] See above, *Part* II. *Aph.* 3.

[k] See below, *Sect.* II. *paſſim.*

[l] See in particular, *Aph.* 4, 16, *&c.*

TABLE

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TABLE IV.

An Example of the Exclusion, or Rejection, of Natures, from the Form of Heat.

(1.) *By the Sun's Rays*; *reject* Elementary, *or* Terreſtrial Nature, *from the* Form of Heat [a].

(2.) *By common Fire*; *and principally by the ſubterraneal Fires, which are very remote, and entirely cut off from the celeſtial Rays*; *reject* celeſtial Nature.

(3.) *By the heating of all kinds of Bodies, whether mineral, vegetable, or animal*; *whether Water, Oil, Air,* &c. *upon the bare Approach of Fire, or other hot Body*; *reject all* Variety, or ſubtile Texture of Bodies.

(4.) *By Iron, and ignited Metals, which heat other Bodies, without Loſs of Weight, or Subſtance*; *reject* Communication, or Mixture of any other hot Subſtance.

(5.) *By hot Water, hot Air, Metals, and other ſolid Bodies that will receive Heat without Ignition*; *reject* Light and Splendor.

(6.) *By the Rays of the Moon, and Stars, except the Sun*; *again, reject* Light and Splendor.

(7.) *By the Compariſon of ignited Iron, and the Flame of Spirit of Wine*; *whence the Iron appears to be hotter and leſs lucid, but the Flame of the Spirit more lucid and leſs hot*; *again, reject* Light and Splendor.

(8.) *By Gold and other ignited Metals, which are very denſe in their entire Subſtance*; *reject* Tenuity.

(9.) *By Air, which is generally found cold, and yet remains thin and ſubtile*; *again, reject* Tenuity.

(10.) *By ignited Iron, which ſwells not in Bulk, but remains of the ſame Dimenſion to Appearance* [b]; *reject* local, or expanſive Motion in the whole.

[a] That is, ſince the Sun's Rays are found to be hot; a terreſtrial or elementary Nature is not of the *Form of Heat*; or Heat is not confined to terreſtrial or elementary Bodies. See below, *Aph.* 19. and 20. (31.)

[b] Tho' not upon exact Trials. Let it be conſider'd how juſtly this Expanſion, or Rarifaction of the whole Body, has been made by ſome the univerſal *Criterion*, or *Form of Heat*. Se below, *Aph.* 20. (8.) (15.) (13.) (26.)

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(11.) *By the Dilatation of the Air in Weather-Glaſſes, and the like; where the Air is evidently moved locally, and expanſively, without becoming manifeſtly hotter; again, reject* local or expanſive Motion in the whole.

(12.) *By the Facility wherewith all Bodies are warmed, without Deſtruction, or remarkable Alteration; reject* Deſtruction, and great Communication of any new Nature.

(13.) *By the Similitude and Conformity of certain Operations, performed both by Cold and Heat; reject* as well expanſive as contractive Motion, in the whole.

(14.) *By Fire following Heat upon the Attrition of Bodies; reject* principal Nature, *that is*, a poſitive Nature, not cauſed by a precedent one.

N. B. There are alſo other Natures to be excluded: for our *Tables* are not deſigned as perfect, but only as Examples.

N. B. Neither all, nor any one of the preceding Natures, are of the *Form* of Heat: ſo that Men in their Practices upon Heat, are freed from the Neceſſity of introducing any, or all of them[c].

[c] Obſerve how this Inveſtigation of *Forms*, correſponds to a juſt *Practical Rule*, (for producing unlimited Effects,) laid down above, under *Aph.* 4. (5. and 6.) If due Attention has been uſed, the Reader will now begin to ſee the the Scene open; and find Cauſe to expect more conſiderable Things from the human Power and Knowledge, than have hitherto been produced by any Philoſophers unacquainted with the true Method of Enquiring into Nature, by the Means of this *New Engine* of the Mind.

Aphorism XIX.

Excluſion leads to Induction.

35. The Buſineſs of *Excluſion* lays the Foundations for a genuine *Induction*; which, however, is not perfected till it terminates in the Affirmative: but our *Excluſion* is by no means perfect; nor can it poſſibly be ſo at firſt. For *Excluſion*, as we plainly ſee, is the Rejection of *ſimple Natures*; and if we have hitherto no juſt and true Notion of *ſimple Natures*, how can the Buſineſs of Excluſion be rectified? But ſome of the abovemention'd Notions, as thoſe of *Elementary Nature*, *Celeſtial Nature*, and *Tenuity*[d], are vague and ill defined. Wherefore, not forgetting how great a Task we have undertaken; *viz.* no leſs than that of rendering the *human Underſtanding* equal to *Things* and *Nature*; we are by no means to ſtop here; but muſt proceed to invent and afford greater *Helps* to the Mind. For, doubtleſs, in the *Interpretation of Nature*, the Mind is to

[d] See *Table* IV. §. 1, 2, 7.

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to be ſo prepared and formed, that it may both reſt upon proper Degrees of Certainty; and yet conceive, eſpecially in the Beginning, that the Things which are preſent, have a great Dependance upon thoſe behind [c].

APHORISM XX.

36. And yet, becauſe Truth will ſooner emerge from Error, than from Confuſion; we judge it uſeful to allow the Underſtanding, after having made and conſidered the three *Tables of preparatory View*; in the Manner we have laid them down; to apply itſelf, and attempt the Buſineſs of *Interpreting Nature in the Affirmative*; on the Strength of the Inſtances contained in theſe *Tables*; and ſuch as may be otherwiſe procured. And this kind of Attempt, we call a *Permiſſion to the Underſtanding*, the *Rudiments of Interpretation*, or the *firſt Vintage of Enquiry* [f]. *Permiſſion to the Underſtanding; or the firſt Vintage of* Enquiry.

[c] See above, *Part* I. *Aph.* 130. *ad finem.*

[f] The firſt Vintage, in Wine-Countries, produces the pooreſt Wines; which they uſually diſtil, for Brandy; as being not fit to keep, in the Form of Wines.

TABLE V.

The Firſt VINTAGE, or Dawn of Doctrine, from the FORM OF HEAT.

(1.) *IT appears from the preceding Doctrine, that the* Form *of a Thing reſides in all the particular* Inſtances, *wherein the Thing reſides; otherwiſe it would not be a* Form [a]: *and therefore no contradictory Inſtance hereof can be given.*

(2.) *Yet the* Form *is found much more conſpicuous in ſome Inſtances, than in others; eſpecially in thoſe where the Nature of the* Form *is leſs confined, obſtructed and ſubdued by other Natures: and this Kind of* Inſtances *we call* ſhining *or* glaring Inſtances [b]. *And thus we now proceed to reap the* Firſt Fruits *of our Enquiry after the* Form of Heat, *in the Way of Example.* The *Form* found more eminently in ſome Inſtances, than in others.

(3.) *In all the* Inſtances, *conſidered as well ſeparately as collectively, the* NATURE WHOSE LIMITATION IS HEAT, APPEARS TO BE MOTION [c]. *This we find chiefly in Flame,* Motion the Form of Heat.

[a] See above, *Part* II. *Aph.* 4.

[b] See below, *Sect.* II. *Aph.* 24.

[c] See above, *Aph.* 4.

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which is in perpetual Motion; *and in hot, or boiling Liquors, which are alſo in a continual Agitation. It likewiſe appears, by the Sharpneſs or Increaſe of the Heat, caus'd by Motion*; *as in Bellows and Blaſts* [d]: *and again, in other Kinds of Motion*; *for which ſee the* twenty-eighth *and* thirty-firſt Inſtances *of the* Third TABLE. *'Tis found alſo in the Extinguiſhing of* Fire, *and* Heat, *by all ſtrong Compreſſion, which checks and puts a ſtop to Motion. See the* thirtieth *and* thirty-ſecond Inſtances *of the* Third TABLE. *Again, it is ſhewn by this, that all Bodies are deſtroy'd, or at leaſt remarkably alter'd, by all kinds of Fire, or ſtrong or vehement Heat. And from hence it plainly appears, that* Heat cauſes a Tumult, Diſturbance, and brisk or eager Motion in the internal Parts of Bodies; which gradually tends to a Diſſolution of the Body.

Or its *Genus.* (4.) *What we have thus ſaid of* Motion, *is to be underſtood of it, as of a* Genus [e], *with regard to Heat: and not as if* Heat *generated* Motion; *or as if* Motion *generated Heat*; *tho' this may be true in ſome Caſes: but the Meaning is, that* Heat *itſelf, or the very* Exiſtence of Heat, *is* Motion, *and nothing elſe* [f]; *tho'* Motion limited *by the Differences we ſhall preſently ſubjoin*; *after giving a few Cautions for the avoiding of Ambiguity.*

Heat relative to Man. (5.) *Heat to the Senſe is a relative Thing, that regards Mankind, not the Univerſe*; *and is juſtly aſſigned only as the Effect of Heat upon the animal Spirit or Mind*; *being in itſelf an indeterminate Thing: for the ſame Body, according as the Senſe is prediſpoſed, may give the Preception as well of Heat as of Cold*; *as appears by the* forty-firſt Inſtance *of the* Third TABLE.

Heating not of the Form of *Heat.* (6.) *But the* Communication, *or* tranſitive Nature *of* Heat, *whereby one Body conceives Heat upon being applied to another that is hot, muſt not be confounded with the* Form of Heat: *for* Heat *is one Thing, and* Heating *another. Heat is produced by the Motion of Attrition, without any Heat preceding that Motion*; *whence* Heating *is excluded from the* Form of Heat. *And when Heat is produced by the Approach of a hot Body*; *this does not proceed from the* Form of Heat; *but depends entirely upon a higher and more common Nature*;

[d] See *Tab.* III. *Inſtance* 27.

[e] Or univerſal Kind.

[f] See above, *Part* II. *Aph.* 4.

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ture [g]; viz. *upon the Nature of* Communication, Assimilation, *or* Self-multiplication; *which demands a separate Enquiry.*

(7.) *The Notion of* Fire *is vulgar; and composed of Heat and Splendor, as existing in some one Thing: for Example, in common Flame, and Bodies ignited, or made red-hot. And having thus removed all Ambiguities; we at length come to the true Differences, which limitate* Motion, *so as to constitute it the* Form of Heat [h].

I.

(8.) *The* first Difference *is this; that* Heat is an expansive Motion, whereby a Body endeavours to dilate itself, and stretch into a greater Sphere, or Dimension, than it before possessed [i]. *And this Difference appears principally in Flame, where the Smoak, or unctuous Vapour, manifestly dilates and opens itself into Flame. It appears likewise in all boiling Liquors; which manifestly swell, rise up, bubble, and carry on their Process of Expansion, till they change into a much more rarified Body, than the Liquors themselves; as for Example, into Vapour, Flame or Air.* The first Difference of Motion in the Form of *Heat.*

(9.) *It appears likewise in Wood, and all combustible Bodies, which sometimes sweat; but always evaporate.*

(10.) *It appears again, in the melting of Metals, which being of a very compact Substance, do not easily swell and dilate; yet their* Spirit [k], *after being itself dilated, and endeavouring at a still greater Extension, forces and agitates the more gross Parts into a fluid State: and if the Heat be greatly increased, it resolves, volatizes, and drives off much of their Substance.*

(11.) *It appears also in Iron and Stone; which at least are soften'd, if not liquified and fused by Fire. So likewise Rods of Wood become flexible, by being somewhat heated in hot Ashes.*

(12.) *But*

[g] This is a subtile and curious Distinction. The Meaning appears to be, that, when Heat is once produced by the Existence of its *Form*, that is, by a particular *Motion*; it propagates itself, not by means of its *Form*, but by the Principle of Assimilation, or Self-Multiplication. See Sir *Isaac Newton* upon the *Heat of the Comets.* Princip. *Lib.* III. p. 467, *&c.*

[h] See *Part* II. *Aph.* 4.

[i] Observe, that this does not contradict, but coincide with the tenth and eleventh *Instances* of the *Fourth Table*; tho' the correspondence may not, perhaps, appear at first Sight. For farther Confirmation, see below, §. (15.) (19.) (26.)

[k] See the *Sylva Sylvarum*, p. 48, 49, 50.

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(12.) *But this Motion is beſt perceived in Air; which continually and manifeſtly diliates itſelf, with a ſmall Heat; according to the* thirty-eighth Inſtance *of the* Third TABLE [l].

(13.) *Again, it appears from the contrary Nature of Cold: for Cold contracts all Bodies, and makes them ſhrink; inſomuch that Nails have dropt out of Walls, and braſs Veſſels have crack'd, through Cold. So likewiſe Glaſs heated, and ſuddenly brought into the Cold, cracks and flies to pieces. Air contracts itſelf even upon lightly cooling; as appears by the* thirty-eighth Inſtance *of the* Third TABLE [m]. *But the full Conſideration of theſe Particulars belongs to the* Enquiry of Cold.

(14.) *And it is no Wonder that* Cold *and* Heat *ſhould perform many Actions in common; according to the* thirty-ſecond Inſtance *of the* ſecond Table; *becauſe two of the Differences, which we ſhall preſently mention, belong to both* Natures [n]: *tho' in the preſent Difference, their Actions are diametrically oppoſite; for* Heat *gives an expanſive, and* Cold *a contractive Motion.*

II.

The ſecond Difference.

(15.) *The* ſecond Difference *is a Modification of the former; and depends upon this, that* Heat is an expanſive Motion, or a Motion towards the Circumference; but with this Law, that at the ſame Time it riſes upwards. *And we cannot doubt but there are many mixt Motions; as that of an Arrow, for Example, which revolves in going forwards, and advances by revolving. And, in like manner, the* Motion *of* Heat *is, at the ſame Time, both expanſive and upwards.*

(16.) *This* Difference *is perceived by heating one End of an Iron Rod, held perpendicularly in the Fire; in which Poſture it will burn the*

[l] Neither does this contradict the eleventh *Inſtance* of the fourth *Table*. The aſſigning of theſe Differences is a particular Work of the Underſtanding, employ'd ſolely in adjuſting and reconciling the Inſtances of the preceding *Tables*, without Diſtraction or Avocation.

[m] It ſhould here be remember'd, that Water expands in Freezing: for Ice is ſpecifically heavier than the Water that affords it. How this happens, the Author explains in the *Hiſtory of Condenſation and Rarifaction*, p. 551. But, perhaps, if the Water be very well purged of its Air, before it is froze, the Ice will not be lighter than Water. See *Boerhaave's Chemiſtry*, under the Chapters of *Fire* and *Water*. See alſo Mr. *Hawksbee's Phyſico-Mechanical Experiments*, p. 257.

[n] See below, §. (25.) (26.) (29.)

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the Hand much ſooner at the other End, than if it were held aſlope, or downwards.

(17.) *This* Difference *alſo appears from Diſtillation* per deſcenſum, *or the Method of Diſtilling downwards; (which is practiſed upon curious Flowers, whoſe Odour is eaſily loſt;)* viz. *by applying the Fire not below, but above the Subject; that it may ſcorch the leſs: for not only Flame, but all Heat tends upwards.*

(18.) *Let Trial be made of this in the contrary Nature, that of Cold; to find whether Cold will not contract Bodies by moving downwards; as Heat dilates them, by riſing upwards. Take, therefore, two Iron Rods, or two Glaſs Tubes, exactly alike; heat them a little, and place a Spunge full of Water, or a Quantity of Snow, under the one; and in like manner over the other: for we conceive that Rod, or Tube, will cool faſter at the farther End, where the Snow lies at the Top, than where it lies at the Bottom: contrary to what happens in Heat* [o].

III.

(19.) *A* third Difference *is this; that* Heat is not an expanſive, uniform Motion, in reſpect of the Whole [p]; but Expanſive in the leſſer Particles of a Body: and at the ſame time check'd, repell'd and reverberated; ſo as to become an alternative, perpetually ſhuddering, or ſtruggling Motion, or Action; which is irritated by the Reaction of the Body [q]: *whence proceeds the Violence of* Fire *and* Heat. The third Difference.

(20.) *And this* Difference *appears chiefly in Flame, and boiling Liquors; which continually tremble, ſwell in their ſmall Particles, and again ſubſide.*

(21.) *It appears alſo in ſuch Bodies as are of too hard a Texture, to ſwell, or increaſe remarkably in Bulk, when heated or ignited; as red-hot Iron, in which the Heat is very intenſe* [r].

(22.) *It alſo appears from hence, that Fire burns ſharpeſt in the coldeſt Weather.*

(23.) *Again,*

[o] See the Experiments of the *Academie del Cimento* at the End; and Mr. *Boyle's Hiſtory of Cold.*

[p] As when a Bladder is diſtended by blowing into it.

[q] As when a Nail is driven up to the Head in a Board, and made to ſhudder and vibrate in its ſmall Parts, by the Stroke of the Hammer.

[r] It ſhould ſeem as if this ſhuddering Action were viſible in Iron; even tho' heated below the Degree of Ignition: for in looking upon ſuch heated Iron, the Eye receives an odd Impreſſion, of a particular Kind of Waving, or recurrent Motion.

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(23.) *Again, it appears from this, that when the Air ſtretches uniformly and equably in a Weather-Glaſs, there is no ſenſible Heat perceived. And even confined Winds, tho' they blow and move violently, yet produce no remarkable Heat; becauſe the Motion is the Motion of the Whole; without an alternative or ſhuddering Motion in the Particles. And to this Purpoſe, let Trial be made whether Flame does not burn ſharper, on the Surface than in the Middle* [s].

(24.) *Laſtly; it appears from this, that all Burning paſſes through the minute Pores of the Body burnt; ſo that the Burning undermines, ſaps, penetrates, and enters, like the Points of an infinite Number of Needles. And hence it is that all acid Spirits, if ſuited to the Body they act upon, have the Effect of Fire, from their diſſolving, or corroding Nature* [t].

(25.) *And this* Difference *we now ſpeak of, is common to the* Nature of Cold, *wherein the contractive Motion is reſtrained by the contrary Endeavour of Expanſion; as the expanſive Motion is checkt in* Heat, *by the oppoſite Endeavour of Contraction. And therefore, whether the Parts of a Body penetrate from without inwards, or from within outwards, the Caſe is ſimilar; tho' the Force be very unequal: becauſe we have no Body here upon the Surface of the Earth, that is intenſely Cold* [u].

IV.

The fourth Difference.

(26.) *The* fourth Difference *is a Modification of the laſt, and depends upon this, that* the preceding Motion of Stimulation or Penetration be ſomewhat rapid, or no way ſluggiſh; and alſo play among ſuch Particles as tho' minute, yet are not extremely fine, but as it were of a moderate Size [w].

(27.) *This*

[s] This is eaſily tried in a common Candle; where if a Piece of Packthread, or a Splinter of Wood, be thruſt into the Centre of the Flame, the Point will remain for a while unburnt; whilſt the outermoſt Part, in Contact both with the Flame and Air, readily takes Fire, and burns away. Hence Flame appears to be a kind of Film, or conical Surface, whoſe Inſide is fill'd with the Smoak of the Fewel. Let the common Inſtances be here remember'd, of Sealing-Wax, *&c.* ſmoked by being held too far in the Flame of the Candle. See Dr. *Hook's Lectures of Light*; and *Boerhaave's Chemiſtry*, under the Chapter of *Fire*.

[t] See Dr. *Hook's Lectures of Light*; and *Micrographia*, paſſim.

[u] See *Tab.* I. *Inſtance* 27.

[w] Obſerve how the Author, according to his own Rule, proceeds to limit the particular Motion, which, as a true *Genus*, is to conſtitute the *Form of Heat*. See above, *Aph.* 4.

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(27.) *This Difference appears upon comparing the Effects of Fire, and the Effects of Time, or Age, which withers, conſumes, undermines, and reduces Bodies to Aſhes, as well as Fire; or rather much more ſubtily: but becauſe this kind of Motion is exceeding ſlow, and exerciſed upon very fine Particles, the Heat is not perceived.*

(28.) *It again appears, upon comparing the Diſſolutions of Iron and Gold: for Gold diſſolves without cauſing a manifeſt Heat; but Iron excites a ſtrong one; tho' it ſcarce diſſolves quicker than Gold: becauſe in Gold the Menſtruum not only enters milder, and more ſubtily, but the Parts of the Gold alſo prove more yielding; whereas in Iron, the Entrance of the Menſtruum is violent, and attended with a Conflict; the Parts of the Iron making a much greater Reſiſtance* [x].

(29.) *Laſtly; it appears alſo, in ſome Meaſure, from ſuch Gangrenes and Mortifications of the Fleſh, as cauſe no great Heat or Pain, by reaſon of the Subtilty of the Putrefaction* [y]. *And let this ſerve for what we call the* firſt Vintage, *or an Attempt towards* interpreting the Form of Heat; *which the Underſtanding makes, as we ſaid, by the Way of* Permiſſion [z].

(29.) *The Fruit of this* firſt Vintage, *is, in ſhort, the following* true Definition, or Form of Heat, *as it regards the Univerſe; and not as it is only relative to the human Senſe:* viz. HEAT IS AN EXPANSIVE, BRIDLED MOTION, STRUGGLING IN THE SMALL PARTICLES OF BODIES. But this Expanſion is modified; ſo that whilſt it ſpreads in Circumference, it has a greater Tendency upwards. 'Tis alſo modified alternately, or by Fits; ſo as to prove no way ſluggiſh; but vigorous and active [a]. The theoretical Fruit.

(31.) *And as to Practice, the Caſe is exactly correſpondent, and amounts to this*; that if in any natural Body a Motion can be excited, The practical Fruit.

[x] See the Hiſtory of *Condenſation and Rarifaction*, p. 544, 545, 546.

[y] And theſe kind of Gangrenes or Mortifications may happen by Cold, or by Freezing. See Mr. *Boyle's Hiſtory of Cold*, paſſim.

[z] See above, *Aph.* 36. The Meaning is, that as Men are apt to grow weary of proſecuting Enquiries, where they reap no quick Advantage, or receive no immediate Fruits of their Labours; the Underſtanding is permitted to gratify itſelf, by a kind of Anticipation; or by making ſome Offer and firſt Attempts at diſcovering the *Forms of Things*: but till the Enquiry is duly proſecuted, Men have no Right to pronounce, or even to expect, that the *Forms of Things* can be perfectly diſcover'd.

[a] Here we have an Inſtance of a genuine, or ſcientificial *Definition*; which is no other than the *Form* or Nature of the Thing defined: So that true *Definitions* are the Reſults of Enquiries duly proſecuted; and not thoſe ſlight arbitrary Notions uſually call'd by the Name of *Definitions*.

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cited, which ſhall dilate or expand, and again recoil, or turn back upon itſelf; ſo as that the Dilation ſhall not proceed equably; but partly prevail, and partly be check'd; any Man may doubtleſs produce Heat: *without at all regarding whether the Body that is wrought upon be* elementary, *as they call it, or earthly; or whether it be enriched with a celeſtial Influence; whether it be luminous or opake; rare or denſe; locally expanded, or contain'd within its original Dimenſions; whether it tend to Diſſolution, or remain in its native State; whether it be animal, vegetable, or mineral; whether it be Water, Oil, Air, or any other Subſtance, that is ſuſceptible of the foreſaid Motion* [b]. *And* Heat, *in reſpect of the Senſe, is the ſame Thing; only with ſuch Relations as belong to Senſe. And this may ſerve as an* Example *of our Method of* Inveſtigating Forms [c].

[b] Hence we are furniſhed with a farther Criterion, or Argument, *à poſteriori*, that will ſhew in Fact, whether the *Form* be juſtly diſcover'd. Thus if we can produce Heat in all Bodies ſuſceptible thereof, by introducing into them the *Motion* here deſcribed; we ſhall have a Confirmation that this *Motion* is the *Form of Heat*. And the only Exception in Practice is, perhaps, *Water*; for introducing Heat into which, by the Means of this particular Motion, a well adapted, mechanical Contrivance, ſeems hitherto wanting; tho' poſſibly it might with Eaſe be ſupplied.

[c] Tho' this Method is here ſo fully deliver'd, and promiſes better Things than poſſibly any other Method of Enquiry hitherto known; yet it appears to be ſtrangely diſregarded. And, certainly, it ſhould ſeem as if very few were apprized that this Method, thoroughly purſued, is an *actual Demonſtration*, as juſtly and properly ſuited to *Phyſics*, or indeed to all *Philoſophy*; as Mathematical Demonſtration, and Algebra, are to *Geometry*, and general *Mathematics*.

SECT.

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SECT. II.

The DOCTRINE *of* INSTANCES: *or, the Method of Expediting the* INTERPRETATION *of* NATURE, *and the* INVESTIGATION *of* FORMS, *by* PREROGATIVE INSTANCES [a].

APHORISM XXI.

Tranſition to the Doctrine of Inſtances.

1. HAVING thus laid down the *Tables, that afford the firſt View of a Subject* [b], and given an Example of the *Method of Rejection*, or *Excluſion*; and a Specimen of the *Fruits*, or *firſt Dawn of Doctrine* to be derived from them; we proceed to the other *Helps of the Underſtanding*, in the Buſineſs of *Interpreting Nature*; or forming a true and perfect *Induction*. And, in propoſing theſe Helps, we ſhall, where-ever *Tables* are required, proceed upon the foregoing Subject of *Heat* [c]; but where fewer Examples are ſufficient, we will occaſionally launch into Subjects

[a] The Doctrine of *Inſtances* is deliver'd with great Diligence, Sagacity, and Exactneſs, in the preſent Section. The Deſign is to ſhew what are the principal, moſt material, and eſſential Particulars in every *Enquiry*; or what *Inſtances* are chiefly to be ſought after and regarded, in order to diſcover the real *Natures* of *Things*, with the greateſt Certainty and Expedition. It is a Doctrine of the firſt Importance in the Diſcovery of *Forms*; and for want thereof the Philoſophical Enquiries we generally meet with, are but light Skirmiſhes, inſtead of cloſe Grapplings with Nature: or, without a Metaphor, they have no ſtrong and direct Tendency to the Diſcovery of *Forms*; but appear vague, indetermined, and rather amuſing than uſeful.

[b] That is, in the way of Example; and not in the way of a rigid and juſt Enquiry; which requires much more Induſtry and Exactneſs; after the manner of the Author's Enquiry into the Subjects of *Life and Death*, *Winds*, *Condenſation* and *Rarifaction*: tho' theſe alſo are but a kind of *larger Examples*; and not *finiſhed Enquiries*.

[c] The *Tables*, for that purpoſe, being laid down in the preceding Section.

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of all Kinds; without confounding our Enquiry of *Heat*, on the one hand; or confining our *Doctrine* to too ſcanty Bounds, on the other [d].

The Diviſion of the remaining Parts of the Novum Organum.

2. We therefore propoſe to treat, (1.) of *Prerogative Inſtances*; (2.) of *the Helps of Induction*; (3.) of *the Rectification of Induction*; (4.) of *the Method of varying Enquiries*, according to the Nature of the Subject; (5.) of *Prerogative Natures for Enquiry*; or, what Subjects are to be enquired into firſt, what ſecond; (6.) of *the Limits of Enquiry*; or, an *Inventory of all the Natures in the Univerſe*; (7.) of *reducing Enquiries to Practice*; or, making them ſubſervient to human Uſes; (8.) of *the Preliminaries to Enquiry*; (9.) and laſtly, of the *aſcending and deſcending Scale of Axioms* [e].

Aphorism XXII.

(1.) *Solitary Inſtances, what.*

3. Among the *Prerogative Inſtances for interpreting Nature*, in the firſt place come the *ſolitary Kind* [f]; that is, (1.) thoſe which exhibit the Nature enquired after, in ſuch Subjects as have nothing common with others, beſides that very Nature; or, (2.) thoſe that exhibit the Nature enquired after, in ſuch Subjects as are every way ſimilar to others, excepting in that very Nature. For it is manifeſt, that ſuch *Inſtances* as theſe will ſhorten the Enquiry; and promote and haſten the *Excluſion* [g]: ſo that a few of them may do the Service of many [h].

Their Uſe.

Exemplified in the Subject of Colours.

4. For Example; (1.) if the Enquiry be about the *Nature of Colour*; *ſolitary Inſtances* are *Priſms*, and *Cryſtal Gems*, or *Glaſſes*, which repreſent *Colours*, not only in themſelves, but alſo externally upon a Wall, *&c.* Underſtand the ſame of Dews, *&c.* For theſe have nothing in common with the *fixed Colours* of Flowers, coloured Gems, coloured Glaſs, Metals, various Woods, *&c.* beſides the *Colour* it ſelf. Whence it may be eaſily inferr'd, that Colour is nothing more than an Alteration in the Rays of Light, occaſioned, in the

[d] And, in this View, the following *Aphoriſms* will exhibit a little Map of the Roads for improving all kinds of Knowledge.

[e] Of theſe nine *General Heads*, under which the remaining Parts of the *Novum Organum* were to have been comprized, no more than the firſt is proſecuted by the Author. Nor was any thing afterwards publiſhed towards executing the reſt; tho' it appears that the whole Deſign was laid from the firſt; and that, at Times, the other Parts were gone on with, after the preſent Piece was publiſhed. See *Vol.* I. *p.* 504, 507, 509. See alſo *Vol.* III. *p.* 5. and hereafter, *Aph.* 52. *ad finem.* The want of theſe additional *Sections* may, perhaps, be in ſome meaſure ſupplied by a cloſe Attention to the preſent *Doctrine of Inſtances*: where many of the Particulars are tranſiently touch'd upon; as they alſo frequently are in ſeveral Parts of the *firſt* and *third Volumes* of our Edition. But, in order to render the Whole more generally intelligible and uſeful, it were greatly to be wiſhed, that ſome tolerably qualified Perſon, would give an *Eſſay* upon it, in as familiar a manner as the Subject will allow. See Dr. *Hook*'s *Method of Improving Natural Philoſophy.*

[f] Let it be remember'd that, with regard to the *Names* of the ſeveral kinds of *Inſtances* hereafter mention'd, the Author had a Right to impoſe them; as the Subject was entirely new, and untouched. And, doubtleſs, certain Definitions, and Names, are required, where Things are to be carefully diſtinguiſhed.

[g] See above, *Table* IV. *Aph.* 18.

[h] See above, §. 1. the *Note* [a].

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the *first* Case, by different Degrees of Incidence [h]; and in the *second*, by the different Texture, or Structure of the Body; and so reflected to the Eye. But these Instances are *solitary*, or single, in Point of *Likeness* [i].

5. (2.) Again, in the same Enquiry, the distinct Veins of Black and White in Marble, and the Variegation of Colours in Flowers of the same Species, are *solitary Instances:* for the black and white Parts of Marble, or the Spots of White and Purple in Carnations, agree almost in every respect, except in Colour. Whence it is easily collected, that Colour does not greatly depend upon the intrinsick Nature of the coloured Body; but is owing to a somewhat gross, or bare mechanical Texture of the Parts [k]. Thus these Instances are *solitary*, in Point of Difference. And we call both the Kinds by one and the same Name.

APHORISM XXIII.

6. In the second Place come *Travelling Instances*, or those wherein the Nature enquired after, travels, or advances to Generation, when it was not before in Being; or, on the contrary, travels, or tends to Destruction, when it was in Being before. And, therefore, in either Corrolative, such Instances are always duplicate; or rather one Instance, in Motion, or Passage, is continued to the opposite Period [l]. And Instances of this Kind, not only accelerate and confirm the Business of Exclusion; but also drive the *Affirmation*, or *Form* itself, into a narrow Compass. For the *Form* of the Thing, must necessarily be somewhat introduced, or abolished, by this Transmigration [m]. And tho' all *Exclusion* promotes and forwards the *Affirmation*; yet this is more directly done in the same Subject, than in different ones: for it plainly appears, from all we have said before, that the *Form* discovering itself in one Thing, leads to its Discovery in all the rest. But the more simple this Passage is, the nobler the Instance should be esteemed. (2.) *Travelling Instances.* *Their Use.*

7. Again, these *Travelling Instances* are of great Use in Practice; because, as they exhibit the *Form* joined with an *Efficient*, or *Privation* [n]; they clearly design, or mark out the practical Operation in some Cases: whence any easy Passage is also afforded to the neighbouring Discoveries. There is, however, some Danger in these Instances, that requires a particular Caution: for they may be apt to restrain the *Form* too much to the *Lead to Practice.*

[h] *Viz.* In the Prism, Glasses, Dew, *&c.* Which kind of *Instance* led the Archbishop of *Spalato*, Dr. *Hook*, Mr. *Boyle*, Sir *Isaac Newton*, &c. to very considerable Discoveries, in the Subject of Colours.

[i] *Viz.* Dissimilar in all respects, besides that of Colour; in which the *Solitariness* of the *Instance* consists.

[k] See Mr. *Boyle* of *Colours*.

[l] That is, either there is both a *Generation* and *Destruction*; or else one and the same Process begins with *Generation*, and ends with *Destruction*.

[m] See below, §. 8.

[n] See above, *Part* II. *Sect.* I. *Aph.* 1, 4, *&c.*

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the *Efficient*; and to infect, or at leaſt to tinge the Underſtanding with a falſe Notion of the *Form*, through an apparent Mixture of the *Efficient*; whereas the *Efficient* is never more than the Vehicle of the *Form* [o]. But this Inconvenience is eaſily remedied by making a juſt *Excluſion* [p].

Exemplified in the Subject of Tranſparency. and Whiteneſs.

8. To give an Example of a *Travelling Inſtance*; ſuppoſe the Nature enquired after were *Whiteneſs*, an *Inſtance advancing to Generation* [q] is Glaſs, whole, and in powder; and again, ſimple Water, and Water beat into Froth: for whole Glaſs, and ſimple Water, are tranſparent Bodies, not white; but powdered Glaſs, and the Froth of Water, are white, not tranſparent. It comes therefore to be enquired, what has happened to the Glaſs, or Water, in this Tranſmigration [r]; for, 'tis manifeſt, that the *Form* of *Whiteneſs* travels, or is convey'd over by pounding the Glaſs, and agitating the Water: But nothing is here found added, beſides a bare Comminution of the Parts of the Glaſs, and the Water; together with the Interpoſition of the Air. And it is no ſmall Acquiſition in diſcovering the *Form of Whiteneſs*, that two Bodies, of themſelves more or leſs tranſparent; *viz.* Air and Water, or Air and Glaſs; being mixed together, in ſubtile or ſmall Parts, ſhould exhibit Whiteneſs, by differently reflecting the Rays of Light [s].

The Caution required in them.

9. We muſt alſo give an Example of the *Danger*, and *Caution*, abovementioned [t]; for it may here readily occur to the Underſtanding, depraved by theſe Kinds of Efficients [u], that Air is always neceſſary to the *Form of Whiteneſs*; or that Whiteneſs is generated only by tranſparent Bodies: which two Poſitions are abſolutely falſe; and rejected by numerous *Excluſions* [w]. It will rather appear, without the Interpoſition of the Air, *&c.* that the Bodies perfectly uniform, or ſimilar, in their optical Parts, prove tranſparent; that thoſe which have the ſimple Texture, or Arrangement of their Parts diſturbed, are White; that a Diſſimilarity in the regular Texture of Bodies, affords all Colours, except Black; and that a Diſſimilarity in a compound, abſolutely irregular, and confuſed Texture, conſtitutes Blackneſs [x]. And, for an *Inſtance advancing to Deſtruction* in the ſame Nature of Whiteneſs, we have it in Froth ſubſided, or Snow diſſolved; for Water

[o] See *Part* II. *Sect.* I. *Aph.* 2, *&c.*

[p] See *Table* IV. *Aph.* 18.

[q] *Viz.* The Generation of Whiteneſs. See above, §. 6. and below, §. 9.

[r] *Viz.* From Tranſparency to Whiteneſs.

[s] See Mr. *Boyle*'s *Hiſtory of Colours*, Dr. *Hook*'s *Lectures of Light*, and Sir *Iſaac Newton*'s *Opticks*, paſſim.

[t] §. 7.

[u] Such as the Pounding of Glaſs, the Agitating of Water, *&c.* upon which the Tranſparency enſues.

[w] According to the Procedure of *Table* IV. *Aph.* 18. thus Ceruſe is made of Lead; an opake pulpy Maſs makes white Paper, *&c.* white Minerals are found in the Earth; white Enamels are made in the Fire, *&c.* See *Vol.* I. *p.* 84.

[x] Perhaps theſe Intimations carry the Enquiry into the Cauſes of Colours, on the Side of the colour'd Body, farther than has been generally follow'd. See Mr. *Boyle* of *Colours*, and Sir *Iſaac Newton*'s *Optics*.

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Water depoſites its Whiteneſs, and puts on Tranſparency, upon becoming entire, without any Intermixture of Air.

10. We muſt by no means omit, that under *Travelling Inſtances* ſhould be comprehended, not only thoſe which travel to abſolute *Generation* and *Privation*; but ſuch likewiſe as travel to a greater or leſs Degree of the Nature ſought: ſince theſe alſo tend to the Diſcovery of the *Form*; as plainly appears both from the *Definition of a Form*, above laid down [z], and the *Table of Compariſon* [a]. And therefore the Inſtance of Paper, which is white, when dry, but proves leſs white, when wet; and comes nearer to the State of Tranſparancy, upon the Excluſion of the Air, and the Reception of the Water; is of the ſame Uſe, as the *Inſtances* above-mentioned [b]. *Their Degrees to be obſerved.*

APHORISM XXIV.

11. Among *Prerogative Inſtances*, come in the *third* Place the *Glaring Kind*, mentioned in our *firſt Dawn of Doctrine* from the *Form of Heat* [c]; which we alſo call by the Name of *ſhining*, *releaſed*, or *predominating Inſtances*. And theſe are ſuch as ſhew the Nature ſearched after, naked, and ſtanding alone; and this in an eminent manner, or in the higheſt Degree of its Power; as being diſenthralled, and freed from all Impediments; or at leaſt, by the Strength of its own Virtue, over-ruling, conquering and ſubduing them. For as every Body may receive many united and concrete *Forms* of Natures, it happens that one may repell, depreſs, break and bind down another; whence all particular *Forms* are obſcured. But there are certain Subjects, wherein the Nature ſought after, appears more in its Vigour, than in others; either through the Abſence of Impediments, or the Predominancy of its own Virtue. And Inſtances of this Kind are what principally ſhew the *Form*. But in theſe alſo, Caution muſt be uſed, and the *Alertneſs* of the Underſtanding be repreſs'd: for whatever boaſts the *Form*, and obtrudes it, ſo as that it ſeems to meet the Underſtanding, ſhould be held ſuſpect [d]; and Recourſe be had to a careful and ſevere *Excluſion* [e]. (3.) *Glaring Inſtances.* *Their Uſe.*

12. For Example, if the Nature enquired after be *Heat*; then the Weather-glaſs is a *Glaring Inſtance* of the Expanſive Motion, which is, as we ſaid above, a principal Part of the *Form of Heat* [f]. For Flame, tho' *Exemplified in the Subject of* Heat.

[z] See above, *Aph.* 4.
[a] See above, *Aph.* 13.
[b] *Viz.* The Whiteneſs and Tranſparency of *Glaſs*, *Water*, &c. this latter being a kind of intermediate *Inſtance*, betwixt the former.
[c] See above, *Aph.* 20. (2.)
[d] As being very apt to deceive; for Men have Reaſon to be aſſured, that the *Forms* of Things are not eaſy to find. And let it be duly weigh'd and conſider'd, how many certain *Inſtances* there are of a true and perfect Diſcovery of *Forms*
[e] See above, *Table* IV. *Aph.* 98.
[f] See *Aph.* 12. (37.) 20. *ad finem*. See *Table* I, II, III, IV, and V.

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tho' it manifeſtly ſhews an Expanſion; yet, by reaſon of its momentary Extinction, it does not exhibit the Progreſs thereof. Again; boiling Water, becauſe of the eaſy Tranſition of the Water into Vapour and Air, does not ſo well ſhew the Expanſion of the Water, in its own Body. Again; Ignited Iron, and the like Bodies, are ſo far from ſhewing the Progreſs, that on the contrary, the Expanſion itſelf is not viſible to the Senſe, by reaſon of the re-action and breaking of the Spirit in the compact and groſs Parts[g]: but the Weather-glaſs clearly and evidently ſhews a true progreſſive, and durable Expanſion of the Air by *Heat*[h].

And Gravity. 13. For a *ſecond* Example; let the Nature enquired after be *Gravity*; and then Quickſilver will prove a *Glaring Inſtance*; as having a far greater ſpecific Gravity, than any thing elſe, except Gold, which however is not much heavier[i]: but Quickſilver is a better *Inſtance* for diſcloſing the *Form* of Gravity, than Gold; becauſe Gold being a ſolid and conſiſtent Body, its ſuperior Gravity may ſeem owing to its Solidity: whereas Quickſilver is fluid, and full of Spirit, and yet proves much heavier than Diamond, or any other of thoſe Bodies that are eſteemed the moſt ſolid. Whence it appears that the *Form* of Gravity, or Weight, reſides ſimply in the Quantity of Matter; and not in Solidity, Firmneſs or Hardneſs of Texture.

Aphorism XXV.

(4.) *Clandeſtine Inſtances.* 14. In the *fourth* Place come thoſe we call *Clandeſtine Inſtances*, or *Inſtances of Twilight*; which are, in a manner, oppoſite to *Glaring Inſtances*; as ſhewing the Nature enquired after in its weakeſt Virtue and imperfect State, or Rudiments, ſtriving, or as it were, firſt attempting to manifeſt itſelf; whilſt it remains cover'd and ſubdu'd, or kept under by a contrary Nature. And theſe Inſtances are of extraordinary Service in the Diſcovery of Forms: becauſe, as the *Glaring Inſtances* eaſily lead to *Differences*; ſo the *Clandeſtine Inſtances* eaſily lead to *Kinds*; that is, to thoſe common Natures of which the Natures enquired into are no other than *Limitations*[k].

Exemplified in Conſiſtence or Solidity. 15. For Example; let the Nature enquir'd into be *Conſiſtence*, or *Solidity*, the contrary of which is *Liquidity* or *Fluidity*; then *Clandeſtine Inſtances* are ſuch as exhibit ſome faint and low Degree of Conſiſtency in a Fluid; ſuppoſe a Bubble of Water, which is a kind of conſiſtent, and determinate Pellicule, made of the Body of the Water.

In Drops of Water. In like manner *Iſicles*, if there be Water to follow them, lengthen themſelves out in a very ſlender Thread, to prevent a Diſcontinuity of the Water;

[g] All the *five preceding Tables*, are to be conſulted on this Occaſion.
[h] See above, *Table* II, III. (37.)
[i] See the *Table* of the ſpecific Gravities of Bodies, *Vol.* III. *p.* 512, 513.
[k] See above, *Part* II. *Aph.* 4. Whence it will evidently appear of what great Uſe theſe *Inſtances* are.

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Water; but if there be not a ſufficient Quantity to follow, the Water then falls in round Drops; which is the Figure that beſt ſupports it againſt Diſcontinuation: and at the very Inſtant when the Thread of Water ends, and the falling in Drops begins, the Water recoils upwards, to avoid being diſcontinued. So in Metals, which are fluid upon Fuſion, tho' a little tenacious, ſome of the melted Maſs frequently ſprings up in Drops; and ſticks, in that Form, to the ſides of the Crucible. There is a like *Inſtance* in the Looking-Glaſſes, commonly made of Spittle by Children, in a Loop of Ruſh or Whalebone; where we find a conſiſtent Pellicule of Water. But this is obſerved to much better Advantage in that other Diverſion of Children, when they take ſtrong ſoapy Water, and blow in it with a Pipe, ſo as to raiſe the Water into a Tower, or Caſtle of Bubbles; whilſt, by the Interpoſition of the Air, the ſoapy Water becomes conſiſtent to that Degree, as to be thrown a conſiderable Diſtance without breaking. This alſo appears to Advantage in Froth and Snow, which put on ſuch a Conſiſtency, that they may almoſt be cut with a Knife; tho' they are but Bodies form'd of Air and Water, both of them fluid. Theſe ſeveral Inſtances ſeem clearly to intimate that *Fluidity* and *Conſiſtency* are no more than vulgar Notions, relative to the human Senſe; and that all Bodies have a real Appetite to avoid Diſcontinuation: tho' in homogeneous Bodies, ſuch as Fluids are, it is but weak and feeble; whilſt in thoſe compounded of heterogeneous Matters, it proves more ſtrong and powerful: becauſe the Application of what is heterogeneous, binds Bodies up; but the Entrance of what is homogeneous, relaxes and diſſolves them [1].

Drops of Metal. *Tenacious Fluids.* *Soapy Water.* *Froth and Snow.*

16. As a farther Example; if the Nature ſought were *Attraction*, or the *Appetite of Approach in Bodies*; a moſt remarkable *Glaring Inſtance*, as to the Diſcovery of the *Form*, is the Loadſtone. The contrary of an attractive Nature, is an unattractive Nature, tho' in a ſimilar Subſtance; as in Iron, which does not attract Iron; nor does Lead attract Lead, nor Wood attract Wood, nor Water attract Water. But the Loadſtone arm'd with Iron, or rather the Iron of an arm'd Loadſtone, is a *Clandeſtine Inſtance:* for here it happens, that an arm'd Loadſtone does not, at a certain Diſtance, attract Iron ſtronger than an unarm'd Loadſtone: But if the Iron be moved ſo near as to touch the Iron of the arm'd Loadſtone; then the arm'd Loadſtone will ſupport a much greater Weight of Iron, than the naked and unarm'd Loadſtone; by reaſon of the ſimilitude of Subſtance betwixt Iron and Iron: which Operation was altogether *Clandeſtine*, and ſecret, or concealed in the Iron, before the Loadſtone was applied. Whence it is manifeſt, that the *Form* of Attraction, is a Thing that is vivid and ſtrong in the Loadſtone; but weak and latent in Iron.

Again exemplified in the Subject of Attraction. *In the Loadſtone.*

17. After the ſame manner, it is obſerved, that headleſs Arrows of Wood, being fired out of a Gun, will penetrate farther into Wood, or

In Wood-Arrows diſcharged from a Gun.

[1] Conſider the Inſtances derivable from Chemiſtry, and the Doctrine of *Menſtruums*.

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the ſides of a Ship, than the ſame Arrows headed, or pointed with Iron; by reaſon of the Similitude of Subſtance betwixt Wood and Wood [m]; tho' this before lay conceal'd in the Wood.

In Air, and in Water.

18. Again; tho' Air does not manifeſtly attract Air, nor Water manifeſtly attract Water, in a State of Entireneſs; yet one Bubble approaching another, makes it eaſier diſſolve, than if the other Bubble were away; by reaſon of the Appetite of Conjunction between Water and Water, and between Air and Air.

Moſt obſervable in the ſmall Parts of Bodies.

19. And this kind of *Clandeſtine Inſtances*, which, as we before obſerved, have a noble Uſe, are moſt remarkable in the ſmall and ſubtile Parts of Bodies; becauſe the greater Maſſes of Things follow the more general and univerſal *Forms* [n].

Aphorism XXVI.

(5.) *Conſtituent Inſtances, what.*

20. In the *fifth* Place, come *Conſtituent* or *Collective Inſtances*; that is, ſuch as *conſtitute* one *Species* of a Nature enquired after, in the way of a *leſſer Form*. For, as genuine *Forms*, which are always convertible with the Natures ſought [o], lie deep, and are not eaſily found; the Deſign itſelf, and the Weakneſs of the Underſtanding, require that partial *Forms*, which are *collective* of certain Packets of Inſtances, (tho' by no means of all) into ſome common Notion, ſhou'd not be neglected; but carefully obſerv'd: for whatever collects and unites Natures, tho' it be but imperfectly, paves the Way to the Diſcovery of *Forms*. And, therefore, thoſe *Inſtances* which are uſeful to this Purpoſe, have a conſiderable Power, and a prerogative Nature.

The Caution they require.

21. But great Caution muſt here be employ'd, leſt the Underſtanding, after having found many of theſe particular or partial *Forms*; and hence made Arrangements or Diviſions of the Nature ſought after; ſhould wholly reſt in them; and not apply itſelf to the legitimate Diſcovery of the *great Form*; but preſuppoſe Nature to be manifold and divided, as it were in the Root; and therefore diſdain and reject all farther uniting of her, as a Matter of needleſs Subtilty, and tending to mere abſtract Speculation.

Exemplified in the Subject of artificial Memory.

22. For Example, let the Nature ſought be *Memory*, or the *Means of Exciting and Helping the Memory*; the *Conſtituent Inſtances* will here be, firſt, *Order*, or *Diſtribution*, and *Places* for Artificial Memory. Order, or Diſtribution, manifeſtly aſſiſts the Memory; and Places for Artificial Memory, may either be Places in a proper Senſe, as a Door, a Window, a Corner, *&c.* or familiar and known Perſons; or any other Things at Pleaſure; provided they be placed in a certain Order; as Animals,

[m] Is the *Fact* certain? See the *Sylva Sylvarum*, p. 37.

[n] We have here a remarkable Opening into the Doctrine of Attraction. See Sir *Iſaac Newton's Principia*, and *Optics*, paſſim.

[o] See *Part* II. *Aph.* 4.

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mals, Plants, Words, Letters, Characters, hiſtorical Perſonages, *&c.* tho' ſome of theſe are more, and ſome leſs fit for the Purpoſe. But ſuch Kind of Places greatly help the Memory, and raiſe it far above its natural Powers. Again; Verſe is eaſier learnt and remembred than Proſe [p].

23. And this *Collection*, or *Packet*, *of the three abovementioned Inſtances*, viz. *Order*, *Artificial Place*, and *Verſe*, conſtitute one Species of Help for the Memory: and this Species of Help may be juſtly call'd the *Prevention of endleſs Search*. For when a Perſon endeavours to recollect, or call a Thing to mind; if he has no previous Notion or Perception of what he is in queſt of, he caſts about, and tries every Track, as it were without End: but if he has any previous Notion, this Infinity of Search is preſently cut ſhort; and the Memory is brought to hunt nearer home. But in the three *Inſtances* abovementioned, there is a clear and certain previous Notion contained. For in the *firſt*, there is required ſomewhat agreeable to *Order*; in the *ſecond*, an Image is required, that has ſome Agreement, or Relation, to thoſe *fixed Places*; in the *third*, Words that will ſtand in a *Verſe*: ſo that Infinity is thus cut off or prevented; and the Search limited and reſtrained. *By Order, Place, and Verſe.*

24. Other *Inſtances* will give this ſecond *Species*; that whatever brings an intellectual Thing to ſtrike the Senſe, (which is the Method principally uſed in *Artificial Memory* [q]) helps the Remembrance. *Striking the Senſe.*

25. Other *Inſtances* will give this third *Species*; that thoſe Things which make an Impreſſion by means of a ſtrong Affection or Paſſion, as by cauſing Fear, Surprize, Bluſhing, Delight, *&c.* aſſiſt the Memory. *Moving the Paſſions.*

26. Other *Inſtances* will give this *fourth Species*; that thoſe Things ſink the deepeſt, and dwell the longeſt in the Memory, which are chiefly impreſs'd upon a clear Mind, that remains unprejudic'd, either before or after the Impreſſion; as the Things that we learn in Childhood, or think of juſt before going to ſleep; as likewiſe all the firſt Times that Things are taken notice of. *When the Mind is unoccupied.*

27. Other *Inſtances* will give this fifth *Species*; that a Multitude of Circumſtances, or, as it were, Handles, or Holds to be taken, help the Memory: as the making of many Breaks in Writing, or Printing; Reading or Repeating aloud, *&c.* *Holds for the Mind.*

28. Laſtly; other *Inſtances* will give this *ſixth Species of Help*; that thoſe Things which are expected, and raiſe the Attention, ſtick better, than ſuch as paſs ſlightly over the Mind: whence, if a Man ſhou'd read a Writing twenty times over, he wou'd not remember it ſo well, as if he ſhould read it but ten times, with trying between Whiles to repeat it; and conſulting the Copy where his Memory fail'd. *Things expected.*

[p] See *Vol.* I. *p.* 135, 136.

[q] See the *Art of Memory*, in the *de Augment. Scientiar.* Sect. XV.

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Leſſer Forms of Helps for the Memory.

29. Hence there are, as it were, ſix leſſer *Forms of Helps for the Memory*; viz. (1.) the cutting off Infinity; (2.) reducing intellectual to ſenſible Things; (3.) Impreſſion by a ſtrong Paſſion; (4.) Impreſſion upon a Mind free and diſengaged; (5.) Variety of Handles, or Occaſions; and, (6.) Expectation conceived.

Exemplified in the Subject of Taſte.

30. In like manner, let the Nature ſought be *Taſte*, or *Taſting*; and the following *Inſtances* are *conſtituent*: viz. (1.) thoſe who naturally want their Smell, do not perceive or diſtinguiſh by the Taſte, ſuch Meats as are muſty or tainted; or again, ſuch as are mixed with Garlick, Roſes, and the like.

31. (2.) Thoſe who have their Noſtrils obſtructed, by the accidental falling down of a Rheum, do not diſtinguiſh, or perceive Things that are putrefied, muſty, or ſprinkled with Roſe-Water.

32. (3.) If thoſe who are troubled with this kind of Rheum, hold any fetid or perfum'd Thing in their Mouth, and at the ſame time ſtrongly blow their Noſe, they immediately perceive the Stench or Perfume.

33. Theſe Inſtances will afford, or conſtitute, this *Species*, or rather *Part* of the *Form* of Taſte; *viz.* that the Senſe of Taſting is, in ſome meaſure, no more than an internal Smell, paſſing and deſcending from the upper Cavities of the Noſtrils, to the Mouth and Palate.

34. (4.) On the contrary; Saltneſs, Sweetneſs, Acrimony, Acidity, Roughneſs, Bitterneſs, *&c.* are all perceived, as well by ſuch Perſons as want their Smell, or have it obſtructed, as by any others. Which ſhews that the Senſe of Taſte is a certain Compoſition of an internal Smell, and a kind of exquiſite Touch [r]: but this is no Place to proſecute the Subject.

And the Communication of Qualities, without a Communication of Subſtance.

35. Again, for Example, let the *Nature* ſought be the *Communication of Quality without Commixture of Subſtance.* The *Inſtance* of Light will here afford, or conſtitute one Species of Communication; and Heat, and the Loadſtone another: for the Communication of Light is, in a manner, momentary, and ceaſes immediately upon removing the original illuminating Body; but Heat and the magnetic Virtue, when communicated, or rather excited, in any Body, lodge and remain therein for a conſiderable Time after the firſt Cauſe is taken away.

The Uſes of this kind of Inſtance.

36. Laſtly; theſe *Conſtituent Inſtances* have a very high Prerogative; as being eminently ſerviceable in the forming of Definitions, eſpecially the particular kind; and again, in the making of Diviſions, or Diſtributions of Natures; with regard to which, *Plato* ſaid well, *That he is to be held as a God, who knows perfectly how to Define and Divide* [s].

APHORISM

[r] See the *Sylva Sylvarum*, p. 155, 180, *&c.*

[s] This Uſe will appear evident, by recurring to the Beginning of the preſent *Aphoriſm.* And without frequently going back, and comparing one Part of theſe *Aphoriſms* with another, it cannot be expected that their Doctrine and Uſe ſhould be fully comprehended.

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APHORISM XXVII.

37. The *ſixth* Place may be aſſigned to thoſe *Inſtances* which we call *Parallel, Conformable,* or *Proportional Inſtances*; and ſometimes *phyſical Parallels* and *Similitudes*; that is, ſuch as ſhew a Similitude, Correſpondence, and Relation betwixt Things, not in the leſſer *Forms*, like *Conſtituent Inſtances*[t], but entirely in the Concrete; and are therefore, as it were, Inſtances of the firſt and loweſt Degree, for the uniting of Nature[u]. Nor do they conſtitute any *Axiom* immediately from the Beginning; but only point out, indicate, or preſent certain Relations of Bodies. And altho' theſe Inſtances are of no great Uſe in the diſcloſing of *Forms*; yet they very advantageouſly lay open the Structure of the Parts of the Univerſe; or make a kind of Anatomy in the Members thereof: and therefore ſometimes lead up to ſublime and noble *Axioms:* eſpecially ſuch as belong to the Configuration of the World, rather than to ſimple *Natures* and *Forms*[w]. (6.) *Parallel, or Conformable Inſtances.*

38. For Example, *Parallel* or *Conformable Inſtances* are ſuch as theſe; *viz.* a *Speculum* and the Eye; the Structure of the Ear, and of the cavernous Places that yield an Echo, *&c.* from which Conformity, beſides the Obſervation of the Similitude or Correſpondence (which is uſeful in many reſpects) it is eaſy to form and collect this *Axiom*; that *the Organs of the Senſes, and the Bodies that procure Reflections to the Senſes, are of a like Nature.* *Exemplified in Reflections.*

39. And again, the Underſtanding being thus admoniſh'd, eaſily riſes to a ſtill higher and more noble *Axiom*; viz. that *there is no Difference between the Conſents, or Sympathies of Bodies endowed with Senſe, and thoſe of inanimate Bodies without Senſe; only that in the former an animal Spirit is added to the Body, ſo diſpoſed; but is wanting in the latter:* whence as many *Conformities* as there are among inanimate Bodies, ſo many *Senſes* there might be in Animals; provided there were Organs, or Perforations in the animal Body, for the animal Spirit to act upon the Parts rightly diſpoſed, as upon a proper Inſtrument[x]. *The* Axioms *they may lead to.*

40. And converſely, *as many Senſes as there are in Animals, ſo many Motions there may be in Bodies inanimate, where the animal Spirit is wanting:* tho' there muſt, of neceſſity, be many more Motions in inanimate Bodies, than there are Senſes in animate Bodies; becauſe of the ſmall Number of the Organs of Senſe.

41. And

[t] See *Aph.* 26.

[u] *Viz.* For diſcovering the Similarity, Sameneſs, or Unity of Nature, in diſſimilar Subjects. See above, *Part* II. *Aph.* 3.

[w] This, and the like general Deſcriptions of *Inſtances*, will be uſually intricate and abſtruſe of themſelves, till the ſubſequent Exemplifications are read; which render the Whole plain and intelligible. Whence after reading the Examples, it may be proper to go over the general Deſcription again, in order the better to take the Senſe, and obſerve the Correſpondence.

[x] See *Vol.* III. *p.* 608.

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41. And of this we have a manifeſt Example in Pains: for, as there are numerous Kinds of Pains, in Animals; and, as it were, different Characteriſticks thereof; there being one Pain of Burning; another of Freezing; another of Pricking; another of Squeezing; another of Stretching, *&c.* 'tis certain that all theſe, with regard to the Motion, exiſt in Bodies inanimate, as they do in animate Bodies; for Example, in Wood, or Stone, when burnt, froze, pricked, cut, bent, bruiſed, *&c.* tho' there be no Senſe attending them in theſe inanimate Bodies, for want of the animal Spirit [y].

Exemplified in Plants.

42. Again; the Roots and Branches of Plants, tho' this may ſeem ſtrange, are *Conformable Inſtances:* for every Vegetable ſwells, and thruſts out its Parts towards the Circumference, as well upwards as downwards: and the Difference betwixt the Roots and the Branches, is no more than this, that the Root is contained in the Earth; but the Branch expoſed to the Air and Sun.

43. For if a young thriving Branch of a Tree be bent down into any Parcel of Earth, tho' it does not reach to the Ground, it will ſoon become a Root: and again; if Earth be laid on the Top of a Plant, and be ſo preſſed down by a Stone, or other hard Subſtance, that the Plant cannot grow upwards; 'twill ſhoot out Branches downwards, into the Air [z].

Gums and Gems.

44. The Gums of Trees, and moſt Gems of the Rock, are alſo *Conformable Inſtances*; both of them being no other than Exudations, and Percolations of Juices [a]. For Gums are but the tranſuded Juices of Trees; and Gems the tranſuded Juices of Stones: whence the Clearneſs and Tranſparency of them both are procured, by means of a curious and exquiſite Percolation. And hence it is, that the Hairs and Furs of Animals are not of ſuch beautiful, and vivid Colours, as many Feathers of Birds; *viz.* becauſe the Juices are not ſo ſubtily ſtrain'd thro' the direct Skins of Beaſts, as thro' the Subſtance of the Quill in Birds.

The Scrotum *and* Matrix.

45. The *Scrotum* alſo in Male Animals, and the *Matrix* in the *Female*, are *Conformable Inſtances:* ſo that the noble Structure which diſtinguiſhes the Sexes in Land Animals, ſeems to be nothing more than a Difference as to External and Internal; becauſe, by a greater Force of Heat ſuppoſe, the genital Parts in the Male Sex are thruſt outwards; whilſt the Heat is too feeble in Females, to effect ſuch an Extruſion; whence thoſe Parts in them come to be contained within.

The moving Limbs of Animals.

46. Among *Conformable Inſtances* alſo, come the Fins of Fiſh, the Feet of Quadrupeds, and the Feet and Wings of Fowl; to which *Ariſtotle* adds

[y] See the *Sylva Sylvarum*, under the Article *Spirits*, &c.

[z] See the Experiments upon *Vegetation*, in the *Philoſophical Tranſactions*, *French Memoirs*, and the Author's *Sylva Sylvarum*.

[a] See the Article *Percolation*, in the *Sylva Sylvarum*.

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adds the four Wreaths of Serpents[b]: So that in the Structure of the Universe, the Motion of living Creatures seems generally performed by quadruple Limbs, or Flexures.

47. Again; the Teeth in terrestrial Animals, and the Beaks in Birds, are *Conformable Instances*; which shew, that in all perfect Animals, a certain hard Substance flows to the Head[c]. *Teeth and Beaks.*

48. It seems also no absurd Similitude, or Conformity, that Man should resemble an inverted Plant; the Root of the Nerves and animal Faculties residing in the Head; and the seminal Parts being seated below; if we do not take in the Extremities of the Legs and Arms: but in a Plant, the Root, which answers to the Head in a Man, is regularly placed below, and the Seeds above[d]. *Men and Plants.*

49. But this Precept cannot be too frequently inculcated, that the Procedure and Method of Mankind in their Enquiries and Endeavours to collect a *Natural History*, must be entirely alter'd from the Method at present in Use: for Mens Curiosity and Diligence have been hitherto principally employ'd in observing the Variety of Things, and explaining the precise Differences of Animals, Vegetables and Fossils; the greatest Part of which Variety and Differences are rather the Sport of Nature, than Matters of any considerable and solid Use to the Sciences. Such Things, indeed, serve for Delight, and sometimes contribute to Practice; but afford little or no true Information, or thorough Insight into Nature: *human Industry, therefore, must be bent upon enquiring into, and observing the Similitudes and Analogies of Things, as well in their Wholes as in their Parts*; for these are what unite Nature[e], and begin to build up the Sciences. *The Manner of compiling a* Natural History *intimated.*

50. But here a severe and rigid Caution must be used, that those *Instances* only be received for *Conformable* and *Proportional*, which (as we all along require[f]) denote real physical Likenesses and Resemblances; that is, such as are true, substantial, and actually lodged and seated in Nature; not such as are accidental and showy; much less such as are superstitious or vain; like those which the Writers of natural Magick, (a vain Sett of Men, that scarce deserve to be mentioned in the serious Subject we are now upon) every where boast of, in describing, and sometimes, with great Levity and Vanity, feigning empty Similitudes and Sympathies.

51. To

[b] Are there but four Wreaths made in the progressive Motions of Snakes, Vipers, *&c.*? Consider also the Motion of Caterpillars, Worms, *&c.*

[c] See the *Sylva Sylvarum*, under the Articles *Bones* and *Teeth*.

[d] Animals likewise appear to resemble inverted Plants in another respect; *viz.* in having their Roots within; whilst Plants have them without; for the lacteal Veins in Animals nearly correspond with the Fibres of the Roots in Plants: so that Animals seem nourished from within themselves, as Plants are from without.

[e] See above, *Part* II. *Sect.* I. *Aph.* 3.

[f] See *Part* II. *Aph.* 1, 4, 5, 20, *&c.* See also hereafter, *Aph.* 33. *ad finem.*

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Conformable Inſtances in the Configuration of the World.

51. To proceed; *Conformable Inſtances* are not to be neglected in the Configuration of the World itſelf, with regard to its larger Parts. Thus *Africa*, and *Peru*, with the Continent up to the Streights of *Magellan* have ſimiliar Iſthmus's and ſimilar Promontories: which does not happen without ſome Cauſe.

52. So again; both the old World and the new, are wide and extended towards the North; but narrow and pointed towards the South.

In Cold and Heat.

53. But among the *nobleſt Inſtances of Conformity*, come the intenſe Cold in that called the Middle Region of the Air; and the violent Fires often found to break out from ſubterraneal Places: for theſe two Things are Extremes, and Limitations; the one limiting the Nature of Cold, towards the Arch of the Heavens; and the other limiting the Nature of Heat towards the Bowels of the Earth; by *Antiperiſtaſis, or the Rejection of a contrary Nature.*

In Axioms.

54. Laſtly; a *Conformity of Inſtances* deſerves to be obſerved in the *Axioms* of the Sciences. So the Figure in *Rhetorick*, called *Inexpectation*, when a Matter comes in unexpectedly, is comformable to that Figure in *Muſic*, which is called *ſinking of the Cadence*[g]. So again; the Mathematical Poſtulate, that *Things equal to the ſame third, are equal among themſelves*, is conformable with the Structure of a Syllogiſm, in *Logick*; which unites Things agreeing in a middle Term. To conclude; a certain Sagacity in ſearching out and diſcovering phyſical Conformities and Similitudes, is a very uſeful Thing on many Occaſions[h].

Aphorism XXVIII.

(7.) *Heteroclite Inſtances.*

55. In the *ſeventh* Place come thoſe we term *Singular*, *Irregular* or *Hetoroclite Inſtances*; borrowing the Expreſſion from the Grammarians; that is, ſuch as ſhew Bodies, in the Whole or Concrete, which ſeem to be out of Courſe; or as if they were broken in Nature; ſo as not to agree with other Things of the ſame Kind. For, *Conformable Inſtances* are like ſomething elſe; but *Heteroclite* or *Singular Inſtances* are only like themſelves.

Their Uſe.

56. The Uſe of theſe *Singular Inſtances* is the ſame as of *Clandeſtine Inſtances*; viz. for raiſing and uniting Nature; ſo as to diſcover Kinds, or common Natures, that are afterwards to be limited by real Differences[i]. Nor ſhould the Enquiry be dropt, or broke off, till the Properties and Qualities found in ſuch Things as may be eſteem'd Miracles in Nature, are reduced, and comprehended under ſome *Form*, or certain Law;

[g] When the Muſic drops, as it were, or ſinks on the ſudden.

[h] See the *de Augment. Scientiar.* p. 70. See alſo the *Sylva Sylvarum*, paſſim; particularly under the Article *Sound.*

[i] How far this contributes to the Inveſtigation of *Forms*, may appear from *Aph.* 4. *Sect.* I. *Part* II.

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Law; ſo that all Irregularity or Singularity may be diſcover'd to depend upon ſome common *Form*; and the Miracle only reſt in the exact Differences, Degree, and extraordinary Concurrence; and not in the Species itſelf. But the Contemplations of Men at preſent proceed no farther, than to ſuppoſe ſuch Things as theſe to be Secrets, great Works of Nature, and as it were cauſeleſs, and to make them Exceptions to general Rules.

57. As Examples of *Singular Inſtances*, we have the Sun and Moon among the Stars; the Loadſtone among Stones; Quickſilver among Metals; the Elephant among Quadrupeds; the Senſe of venereal Pleaſure among the Kinds of Touch; and the Scent of the Blood-hound among the Kinds of Smell. *Exemplified.*

58. So with the Grammarians, the Letter S is held *ſingular*; for the eaſineſs of its Compoſition with Conſonants; ſometimes with double, and ſometimes with triple ones: which is a Property of no other Letter.

59. A large Collection of ſuch *Inſtances* ſhould be made; becauſe they whet and quicken the *Enquiry*; and alſo rectify and cure the Underſtanding, depraved by Cuſtom, and Things of common Occurrence[k]. *A Collection to be made of them.*

APHORISM XXIX.

60. In the *eighth* Place come *Deviating Inſtances*; that is, the Errors of Nature, and Things monſtrous and uncommon, where Nature turns aſide from her ordinary Courſe. For the *Errors of Nature* differ from *Singular Inſtances*, in this, that *Singular Inſtances* are Miracles in Species, but Errors of Nature are Miracles in Individuals[l]: tho' theſe *Deviating Inſtances* have nearly the ſame Uſe with the former; as tending to rectify the Underſtanding, depraved by the Things to which it is moſt accuſtomed, and to diſcloſe the moſt common *Forms*. For here alſo the Enquiry is not to ceaſe, till the *Cauſe* of the Deviation be diſcovered; tho' this Cauſe does not properly riſe to any *Form*; but only to the *latent Proceſs*[m] that leads towards it: for as he who knows the Ways of Nature, will the eaſier obſerve her Deviations; ſo he who knows her Deviations will more exactly deſcribe her Ways. (8.) *Deviating Inſtances.* *Differ from Heteroclite Inſtances.*

61. They differ in this alſo from *Singular Inſtances*, that they conduce much more to Practice, than thoſe: for it would be very difficult to generate new Species; but 'tis eaſier to vary the known Species; and thence to produce many extraordinary and unknown Things; *there being a ready Paſſage from the Miracles of Nature, to the Miracles of Art.* For if Na- *Conduce more directly to Practice.*

[k] Let it be all along obſerved, and carefully remember'd, that this whole *Doctrine* of *Inſtances* lays down *Precepts* for conducting *Enquiries*, both general and particular; with a direct View to the *Inveſtigation of Forms*, or the full *Interpretation of Nature*. And in the Light of this Intimation, the Author's larger *Enquiries* are alſo to be conſider'd. See *Vol.* III. *paſſim*.

[l] See above, §. 56, 57.

[m] See *Part* II. *Sect.* I. *Aph.* 1, 4, 5, *&c.*

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ture ſhall once be diſcovered in her Variation, and the reaſon of it become manifeſt, 'twill be eaſy to lead her thither again by Art, where ſhe err'd by Accident; and that not only in one Caſe, but in others: for Errors on one ſide, ſhew and open the Way to Errors and Deviations on all ſides.

Require no Examples. 62. And here Examples are not neceſſary; becauſe they are ſo numerous and common. But a Collection, or *particular Natural Hiſtory ſhould be made of all prodigious and monſtrous Births and Productions of Nature; and of all things new, extraordinary and uncommon in the Univerſe*[n]: But this is to be done with the ſtricteſt and moſt judicious Choice; ſo that it may be ſafely relied on. And here thoſe Things are principally to be held ſuſpect, which in any ſort relate to Religion; as the Prodigies of *Livy*: and thoſe no leſs, which are found in the Writers of *Natural Magick*, *Alchemy*, or other Writers of the like Kind, who are the profeſſed Admirers, or as it were Adorers of Fable and Fiction. But all the Particulars for this Purpoſe are to be derived from grave, judicious and faithful Hiſtory, and juſt Relation.

But a collective Hiſtory.

Aphorism XXX.

(9.) *Frontier Inſtances.* 63. In the *ninth* Place come *Frontier Inſtances*; which we ſometimes alſo call *Participles*[o]. Theſe are ſuch as exhibit thoſe Species of Bodies which ſeem compoſed of two Species, or to be Rudiments betwixt one Species and another; but theſe *Inſtances* may be juſtly reckoned among the *ſingular* or *betoroclite* Kind[p], as being rare, or extraordinary in the Univerſe; yet for their Dignity they ought to be ſeparately placed and treated.

Ther Uſe. For they excellently indicate the Compoſition and Structure of Things; and ſuggeſt the Cauſes of the Number of the ordinary Species in the Univerſe; and lead the Underſtanding from that which is, to that which may be.

Exemplified. 64. Examples of theſe are, (1.) Moſs, which is ſomething betwixt Putrefaction, and a Plant; (2.) certain Comets, which are of a Nature betwixt Stars and fiery Meteors; (3.) Flying-Fiſhes, which are a Species betwixt Birds and Fiſh; (4.) Batts, which are betwixt Birds and Quadrupeds; (5.) the Beaſt ſo like ourſelves, the *Ape*[q]; (6.) the biform'd Births of Animals; (7.) the Mixtures of different Species, *&c*[r].

Aphorism

[n] See *Vol.* I. *p.* 45. and *Vol.* III. *p.* 8—16.

[o] From their Participation of two different Natures; as a Participle, in Grammar, participates of a Noun and a Verb.

[p] See above, *Aph.* 28.

[q] *Simia quam ſimilis, turpiſſima beſtia, nobis.*

[r] *Viz.* Mules, Mungrels, Dogs by the Mixture of a Dog and a Fox; and the like in other Beaſts, Birds, and Fiſh, where the *Inſtances* can be found.

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APHORISM XXXI.

65. In the *tenth* Place come *Inſtances of Power*; or, as we ſometimes call them, *Trophies or Enſigns of Power*, *Inventions*, or the Works of Mens Hands; that is, the moſt noble and perfect Works, and as it were the Maſterpiece in every Art. For ſince the Deſign is to bend Nature to Things, and bring her to ſerve the Turn of Man[r]; 'tis abſolutely proper that the Works already in Mens poſſeſſion ſhould be enumerated and ſet down, (as ſo many Provinces already ſubdued and cultivated) eſpecially ſuch Works as are beſt underſtood, and brought neareſt to Perfection: becauſe theſe afford a ſhort and eaſy Paſſage to farther Diſcoveries. For if any one, after an attentive Conſideration of the Works already extant in this Kind, wou'd determine to uſe his beſt and ſtrongeſt Endeavours, he might doubtleſs either carry them ſomewhat farther, or convert them to ſome other obvious Purpoſe; or apply and transfer them to more noble Uſes than were known before[s]. (10.) *Inſtances of Power.* *Their Uſe.*

66. Nor is this all; but as by extraordinary and uncommon, or miraculous Works of Nature, the Underſtanding is rouzed, excited, and elevated to the Diſcovery of the *Forms* capable of producing them[t]; ſo the like is done by the wonderful and extraordinary Works (or Miracles) of Art; but in a much greater Degree: becauſe the Manner of effecting, producing, and working ſuch Miracles of Art, is generally plain; whereas Miracles of Nature are commonly more obſcure and dark. But here the greateſt Caution is required, that ſuch Miracles of Art may not depreſs the Underſtanding, and fix it, as it were, to the Earth. *The Caution they require.*

67. For there is Danger leſt, in theſe Works of Art, which appear like ſo many ultimate Perfections, and utmoſt Stretches of human Induſtry, the Underſtanding ſhould be captivated, chain'd down, or, as it were, enchanted with them; ſo as not to converſe with other Things; but imagine that nothing of the ſame kind can poſſibly be effected in any other Way; and that no farther Improvement can be made, except by operating in the ſame Way, with greater Diligence, Exactneſs, and a better Apparatus.

68. On the contrary, this is to be held certain, that the Ways and Means of effecting the Things and Works hitherto diſcover'd and deſcribed, are generally ſcanty and defective; and that all

[r] Let a clear and ſtrong Conception be had of the End in View; which is no leſs than to acquire ſuch a Command and Maſtery over Nature, as that Men may uſe her like a ready Inſtrument, or Agent, in effecting the greateſt Works; ſuch as lengthening Life, ruling the Weather, and the like; which to vulgar Philoſophers appear Impoſſibilities.

[s] This directs us to a ſhort and facile Method of improving the known Arts, and inventing new ones. See the Section upon *Learned Experience* in the *de Augmentis Scientiarum*, Vol. I. p. 119.

[t] For every thing producible, is produced by its *Form*. See *Part* II. *Aph.* 4. and the firſt Section throughout. This Point being abſolutely fundamental, and of the very utmoſt Importance, cannot be too often inculcated, or too well underſtood: for *in this, all the Power both of Men and Nature centers.*

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greater Power and Ability depends, and is regularly deducible from the *Fountain of Forms*, not one whereof is hitherto diſcover'd [w].

69. And, therefore, as we formerly obſerved [x], though a Man ſhould ever ſo thoroughly have ſtudied the Nature of the warlike Engines, and battering Rams of the Ancients, or even have ſpent his whole Life in the Enquiry; yet he would never have fallen upon the Invention of Ordnance, and Gun-Powder; no more than he who ſhould have employ'd his Obſervations and Thoughts upon the Woollen and Linen Manufactures, would have thence diſcover'd the Manufacture of Silk [y].

70. And hence all the more noble Inventions will, if duly conſider'd, be found owing not to ſlender Diſcoveries, Applications, and Enlargements of Arts; but entirely to Chance, or Accident; whoſe ſlow and lingring Motion, with which it creeps thro' Ages, nothing can anticipate, prevent, or ſhadow out before-hand, but the *Diſcovery of Forms* [z].

A Hiſtory to be made of them.

71. The Things of this Kind are ſo numerous, as to need no particular Inſtances. The direct Buſineſs is, to viſit and thoroughly inſpect all the *mechanic Arts*, and all the liberal ones too, with regard to Works; and thence to make a Collection, or *particular Hiſtory, of the capital Diſcoveries, Maſterpieces, and moſt perfect Works in each; together with the Ways of producing the Effect, or the Manner of every Operation* [a].

72. But we do not confine the Diligence that ſhould be uſed in this Collection, to Things which are only judg'd Maſterpieces and Secrets in any Art, ſo as to raiſe the Admiration: for Admiration is the Child of Unfrequency; as whatever happens ſeldom, tho' in its Kind but vulgar, yet produces Wonder.

The Singularities of Art to be collected.

73. On the contrary, thoſe Things which ought to be admired, by reaſon of the Differences of their Species, compared with other Species, are ſlightly paſſed over, if they are familiar and obvious: Whereas the *Singularities of Art* are not leſs to be obſerved than the *Singularities of Nature*, mentioned above [b]: and as among the Singularities of Nature, we have placed the Sun, and Moon, the Loadſtone, *&c.* which tho' very common Things, are almoſt ſingular in their natures; the ſame is to be done in the *Singularities of Art*.

74. For

[w] *Viz.* Not according to the preciſe and infallible Method of the Author, laid down and exemplified in the firſt Section of this Second Part of his *Novum Organum*; and farther continued and improved in the preſent *Section*; which, however, leaves the Buſineſs imperfect; the Completion of the Whole being reſerved for a *Third Part* of this general Work. See above, *Aph.* 21.

[x] *Page* 399.

[y] See *Part* I. *Aph.* 109, 110.

[z] Let ſufficient Attention be given to this Paragraph; for much depends upon it.

[a] This indeed would be a capital Work; and we conceive Hopes that ſomething of the kind is the View and Deſign of the *Royal Academy of Sciences at* Paris; *viz.* the deſcribing the chief mechanical Arts and Trades of *France*, with the Engines, Inſtruments, Tools, Proceſſes, and Ways of Working at preſent made uſe of by the beſt Maſters. This Work is ſaid to have been many Years in hand; and will doubtleſs add great Honour to that illuſtrious Body.

[b] *Aph.* 28.

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74. For Example, *Paper*, tho' a very common Thing, is a *ſingular Inſtance of Arts*. For if well obſerved, artificial Matters are either merely wove with direct and tranſverſe Threads, as Silk, Cloth, Linen, &c. or made of concreted Juices, as Brick, Clay, Glaſs, Enamel, Porcelane, and the like, which if well united ſhine, but if leſs united, prove hard, but bear no Poliſh. And all theſe latter Subſtances, made of concreted Juices, are brittle, and do not hold tenaciouſly together. On the contrary, Paper is a tenacious Subſtance, that may be cut, or torn; ſo that it reſembles, and in a manner rivals the Skin, or Membrane of ſome Animal; the Leaves of ſome Plant; or the like Production of Nature: for 'tis neither brittle, as Glaſs; nor thready, as Cloth; for tho' it has its Fibres, yet it has no diſtinct Threads; but exactly reſembles the Texture of natural Matters: inſomuch that the like can hardly be found again among artificial Things; but it remains perfectly ſingular. And in artificial Things, thoſe, doubtleſs, are to be preferr'd which imitate and reſemble Nature the neareſt; or which, on the other hand, powerfully govern, invert or change her [c]. *Theſe Singularities exemplified, in Paper.*

75. Again; among Inſtances of Power, or the Inventions and manual Works of Men, Matters of Dexterity, Deluſion and Diverſion, are not to be rejected wholly: for ſome of theſe, tho' of ſmall Uſe, and only ludicrous, may yet be rich in Information. *Matters of Dexterity.*

76. Laſtly; neither are ſuperſtitious, and thoſe commonly call'd magical Matters, to be quite excluded: for altho' Things of this Kind lie ſtrangely buried, and deep involved in Falſhood and Fable; yet ſome regard ſhould be had to diſcover whether no natural Operation is concealed in the Heap: For Example, in Faſcination; the Power of Imagination; the Sympathy or Conſent of Things at a diſtance; the Communication of Impreſſions, from Spirit to Spirit, as well as from Body to Body; and the like [d]. *Magical and ſuperſtitious Matters.*

APHORISM XXXII.

77. It appears from what is above deliver'd, that five of the *Inſtances* already mentioned; (*viz.* (1.) the *Conformable*; (2.) the *Singular*; (3.) the *Deviating*; (4.) the *Frontier Inſtances*; and, (5.) the *Inſtances of Power*, ought to be reſerved, as the reſt before explained, and many of the following ought to be, till any particular Nature is enquired into; but a Collection of them is immediately to be made from the Beginning; as a certain *particular Hiſtory*; in order to the digeſting of the Things which enter the Underſtanding, and correct the bad Habit of the Mind itſelf; for the Mind muſt needs be tinged, infected, and at length perverted and diſtorted *A Hiſtory of five kinds of* Inſtances *to be made.*

[c] See the *Sylva Sylvarum*, paſſim.
[d] See the Articles *Imagination*, and *Sympathy*, in the *Sylva Sylvarum*.

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diſtorted, by the daily and accuſtom'd Inroads, and Incurſions made upon it[d].

Its Uſe. 78. Theſe *Inſtances*, therefore, are to be employ'd as a certain *Preparative*, to rectify and cleanſe the Underſtanding[e]: for whatever draws the Underſtanding from the Things whereto it is accuſtomed, at the ſame time lays it ſmooth and even, for receiving the dry and pure Light of juſt Ideas and Notions. Theſe *Inſtances* alſo prepare and open the Way to *Practice*; as we ſhall ſhew hereafter[f].

APHORISM XXXIII.

(11.) *Friendly and Hoſtile Inſtances.* 79. In the *eleventh* Place come *Friendly*, or *Accompanying* and *Hoſtile Inſtances*, which we call *Inſtances of fixed Propoſitions*. Theſe are ſuch *Inſtances* as exhibit a Body, or Concrete, wherein the Nature enquired after conſtantly attends, as an inſeparable Companion; or, on the contrary, wherein the Nature ſought perpetually abſents, and diſappears, as a Foe or Enemy. And of this Kind of *Inſtances*, fixed, determinate and general Propoſitions are formed, either negative or affirmative; wherein the *Subject* will be a certain Body, in the Concrete, and the *Predicate*, will be the Nature ſought[g]. But particular Propoſitions are by no means fixed, where the Nature ſought is fluctuating and moveable in any Concrete; whether it be coming on, or acquired; or again, going off or depoſited: therefore particular Propoſitions have no great Prerogative; excepting only in the Caſe of *Tranſmigration*, of which we ſpoke above[h]. Yet even theſe particular Propoſitions are of great Uſe, when confronted, and compared with thoſe that are univerſal; as we ſhall ſhew in its proper Place[i]. But we do not require, even in theſe *univerſal Propoſitions*, a rigorous or abſolute Affirmation or Negation; they being ſufficient for the Purpoſe, tho' there ſhould be ſome ſingular or rare Exception to them.

The Uſe of Friendly Inſtances. 80. The Uſe of *Accompanying*, or *Friendly Inſtances*, is to bring the Affirmation of the *Form* to a narrow Compaſs; for, as in the *Travelling Inſtances*,

[d] The Meaning is, that by conſtantly converſing with ſuch Things only as are common, familiar, and obvious, the Mind acquires a ſtrong Bent, or Habit; whereby it judges that all Things are conformable to theſe: And hence we frequently impoſe groſs Sophiſtry upon our ſelves for Truth; and argue, and act, in a ſtrangely perverſe and ignorant Manner: whereas, before we can reaſon, judge, or philoſophize truly, the Mind muſt be acquainted and familiarized with Things of agreeing, diſagreeing, participating, ſingular, and extraordinary Natures; as well as with thoſe of the common, the obvious, and ordinary Kind. See the *Doctrine of Idols*, Part I. *Aph.* 38—61.

[e] *Viz.* From its *Idols*.

[f] See below, *Aph.* 50. of the preſent *Section*.

[g] So, in the Enquiry of *Heat*, Flame is the Subject, in the Concrete; and Heat the Predicate, or Nature ſought. See below, §. 81, 82.

[h] See above, *Aph.* 23.

[i] Which ſeems to be in the *aſcending and deſcending Scale of Axioms*, which is wanting. See above, *Aph.* 21.

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Instances [k], the Affirmative of the *Form* is contracted, ſo that the Form of the Thing muſt be found to be ſomewhat introduced, or deſtroy'd, by the Act of Tranſmigration; after the ſame manner, in *Accompanying Inſtances*, the Affirmative of the *Form*, is ſo pent up or confined, that it muſt neceſſarily be ſomewhat that may attend and enter ſuch a Concretion of Body; or elſe fly from and ſhun it: whence he who well underſtands the Conſtitution or Structure of this Body, will not be far from diſcloſing the *Form of the Nature ſought*.

81. For Example, let the Nature ſought be *Heat*; and an Accompanying Inſtance is *Flame*: for in Water, Air, Stone, Metal, and numerous other Bodies, Heat is moveable, and may come and go; but all Flame is hot: ſo that Heat perpetually attends in the Concretion, or Whole, of Flame. But there is no *Hoſtile Inſtance* [l] of Heat to be found; for, as to the internal Parts of the Earth, the Senſe has no Cognizance thereof; but of all the Bodies known to Men, there is no Concrete unſuſceptible of Heat [m]. *Exemplified in the Subject of Flame.*

82. Again, let the *Nature ſought* be *Conſiſtence*; and Air is a *Hoſtile Inſtance* [n]: for Metal may flow, and be conſiſtent; ſo may Glaſs: Water likewiſe may be conſiſtent, when it is froze: but 'tis impoſſible that Air ſhould ever be conſiſtent, or put off its Fluidity. *And Conſiſtency.*

83. But there remain two *Admonitions*, with regard to theſe *Inſtances of fixed Propoſitions*, uſeful to the Buſineſs in hand: the firſt is, that if an Affirmative or Negative be univerſally and plainly wanting, this ſhould be carefully noted, as a Non-Entity; as we did in the Subject of *Heat* [o]; where a *Negative*, as to all the Bodies within our Knowledge, is univerſally wanting [p]. *Admonitions relating to them.*

84. In like manner, if the Nature ſought be *Eternity*, or *Incorruptibility*; we have univerſally no *Affirmative* upon this *Earth* [q]: for neither can *Eternity* or *Incorruptibility* be attributed to, or predicated of any Subſtance below the Celeſtial Bodies, or above the internal Parts of our Globe.

85. The other *Admonition* is, that to the *univerſal Propoſitions*, as well affirmative as negative, with regard to any Concrete, thoſe Concretes alſo be *ſubjoin'd* [r], which ſeem to approach neareſt to that which is the Non-Entity: as for Example, in the Subject of *Heat*, the ſofteſt or mildeſt Flames; or ſuch as burn the leaſt [s]; and again, in the

[k] See above, *Aph* 23.

[l] *Viz.* The Converſe of an *accompanying Inſtance*. See §. 79.

[m] See the *Tables* for inveſtigating the *Form of Heat*, p. 433, *&c.*

[n] Becauſe Conſiſtence always flies from Air; or, in other Words, Air always remains fluid.

[o] See *Table* II. and III. See alſo above, §. 81.

[p] All the known Bodies, being, without Exception, ſuſceptible of *Heat*. See *Table* III. *Aph.* 20.

[q] That is, nothing here below is excluded from Corruptibility and Change.

[r] See below, *Aph.* 34.

[s] Suppoſe the Flame of Spirit of Wine, the *Ignis Fatuus*, or that harmleſs lambent Flame, if real, ſaid to have play'd about the Heads of certain Children.

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the Subject of Incorruptibility, Gold, which comes the neareſt to an incorruptible Body: for all theſe Things indicate the *Limits of Nature*, or ſhew the Diſtance betwixt Exiſtence and Non-Exiſtence; and ſerve to confine, or circumſcribe *Forms*, ſo as to keep them from ſliding or wandering out of the Limits and Conditions of Matter [t].

Aphorism XXXIV.

(12.) *Subjunctive Inſtances.*

86. In the *twelfth* Place come the *Subjunctive Inſtances*, mentioned in the preceding *Aphoriſm* [u]; which we otherwiſe call *Inſtances of Extremity*, or *Termination:* for theſe *Inſtances* are not only uſeful, as being ſubjoined to *fixed Propoſitions*; but alſo by themſelves, in their own Particular; as excellently ſhewing the true Diviſions, or Separation of Nature; the Meaſures of Things; and how far Nature may act, or ſuffer: and again, they ſhew the Tranſition of Nature, from one Thing to another.

Their Uſe.

Exemplified.

87. Of this Kind are Gold, in Weight; Iron, in Hardneſs; the Whale, in Bulk of animal Body; the Hound, in Point of Scent; the Exploſion of Gunpowder, in ſudden Expanſion; and the like. Thoſe Things alſo which are laſt in the loweſt Degree, ſhould be no leſs regarded than thoſe that are firſt in the higheſt: as Spirit of Wine, in Weight, or Levity; Silk, in Hardneſs or Softneſs; the minute Worms of the Skin, in animal Bulk [w], *&c.*

Aphorism XXXV.

(13.) *Inſtances of Alliance.*

88. In the *thirteenth* Place come *Inſtances of Alliance, Confederacy*, or *Union*; that is, ſuch as mix and unite Natures, ſuppoſed to be heterogenous, and noted and marked out for ſuch by the Diviſions commonly received. For theſe *Inſtances of Alliances* ſhew, that the Operations and Effects attributed as peculiar to certain heterogeneous Natures, agree alſo to others; ſo as to prove that the Heterogeneity which was founded in Opinion, is not true, or eſſential; and nothing more than the Modification of a common Nature. Whence theſe Inſtances are of excellent Uſe, to rouze and elevate the Underſtanding from Differences to Genuſſes, or Kinds; and to take off the Masks, and diſcover the counterfeit Reſemblances of Things, that occur and preſent themſelves dreſs'd, as it were, in concrete Subſtances.

Their Uſe.

89. For

[t] It deſerves to be obſerved, how extremely careful and ſollicitous the Author is to keep his *Forms* from being any way notional, or abſtract Things: which one might, at the firſt mentioning, be apt to ſuppoſe them; eſpecially as Mens Ears have been accuſtom'd to *Ariſtotelian Forms*.

[u] §. 85.

[w] Theſe are correlative to the former; ſo that the two Kinds limit Nature both Ways; or as well in the deſcending as the aſcending Scale.

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89. For Example, let the *Nature ſought be Heat*; in this Caſe it ſeems a ſettled and authorized Diviſion, that there are three Degrees of Heat; *viz.* (1.) that of the heavenly Bodies; (2.) that of Animals; and, (3.) that of Fire; and that theſe Heats, (eſpecially one of them compared with the other two), are in Eſſence and Species, or in their ſpecific Natures, perfectly different and heterogeneous; as the celeſtial and animal Heats generate and cheriſh; but the Heat of culinary Fire corrupts and deſtroys. Here, therefore, we have an *Inſtance of Alliance* in that common Experiment, when a growing Branch of a Vine is brought withinſide of a Houſe, or into a Room where a continual Fire is kept, ſo as to ripen the Grapes a Month ſooner than the Grapes of the ſame Vine are ripen'd without Doors: whence it appears, that Fruit, even while it hangs upon the Tree, may be ripened by culinary Fire; tho' ſuch ripening might ſeem to be a peculiar Work of the Sun. *Exemplified in Heat.*

90. And upon ſuch an Information as this, the Underſtanding eaſily rouzes, throws off the Notion of eſſential Heterogeneity, and enquires into thoſe real Differences to be found betwixt the Heat of the Sun, and the Heat of culinary Fire, which cauſe their Operation to be ſo diſſimilar, tho' they partake of a common Nature [x]. *Lead to Differences.*

91. Theſe Differences will be found to be Four; *viz.* (1.) that the Heat of the Sun, with reſpect to the Heat of Fire, is much more mild and gentle in Degree; (2.) that it is of a much moiſter Quality, eſpecially as derived to us through the Air; (3.) and principally, that it is very unequal, approaching one while increas'd in Strength, and afterwards receding decreaſed; which is a Thing of capital Uſe to the Generation of Bodies: for it was juſtly obſerved by *Ariſtotle*, that a chief Cauſe of the Generations and Corruptions upon the Surface of the Earth, is the oblique Motion of the Sun through the Zodiac; whence the Heat of the Sun, partly by the alternate Changes of Day and Night, and partly by the Succeſſion of Summer and Winter, becomes wonderfully unequal. And yet this Philoſopher immediately after, corrupts and ſpoils his own juſt Poſition; for raſhly preſuming to judge of Nature, as his manner is, he very magiſterially aſſigns the Cauſe of Generation to the Approach of the Sun; and the Cauſe of Corruption to its retiring: whereas both the Acceſs and Receſs of the Sun give occaſion to the Generation, as well as to the Corruption of Things; not reſpectively; but as it were indifferently: for inequality of Heat adminiſters to their Generation and Corruption; but Equality of Heat, to their Conſervation only [y]. *Four Differences in Heat.*

92. There is a fourth Difference, of very great Moment, between the Heat of the Sun and of Fire; *viz.* that the Sun inſinuates its Operation for great Lengths of Time; whereas the Operations of the Fire, thro' the Impatience of Mankind, are hurried to a Concluſion, in ſhort Inter-

[x] See the *Tables*, p. 433, *&c.*

[y] See the *Sylva Sylvarum*, under the Articles *Preſervation*, and *Putrefaction*.

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vals. But if any one were intent upon tempering the Heat of Fire, and reducing it to a moderate and gentle Degree, which is eaſily practicable ſeveral Ways; and would ſometimes ſprinkle and intermix a little Moiſture; and particularly if he would imitate the Heat of the Sun in Point of Inequality, and wait with Patience ſomewhat longer than Men uſually do in Chemical Proceſſes; he might get quite clear of that falſe Notion of the Heterogeniety of Heat; and eaſily imitate, rival, or in ſome Caſes exceed the Operations of the Sun, by the means of culinary Fire[a].

Inſtances of Alliance, exemplified in Vivification, by Heat.

93. We have a like *Inſtance of Alliance* in Butterflies beaum'd, and as it were become dead with Cold; for theſe Creatures are re-animated, or brought again to Life, by means of a ſmall Warmth of Fire: whence it eaſily appears, that Fire can as well vivify Animals, as upon Vegetables. Thus in the famous Invention of *Fracaſtorius*, the metalline Pan, ſtrongly heated and applied near the Head of a Perſon in a dangerous Fit of the Apoplexy, expands the Animal Spirits, compreſs'd, and as it were ſuffocated, by the Humours and Obſtructions of the Brain; and thus excites them to Motion; in the ſame manner as Fire operates upon Water, or Air; and at the ſame time conſequently expands and quickens them.

94. Sometimes alſo Eggs are hatched by the Heat of a Fire; which in this reſpect perfectly reſembles Animal Heat. Theſe Inſtances therefore, with numerous Inſtances of the like Kind, render it unqueſtionable, that the Heat of Fire may, in many Caſes, be modified ſo as to reſemble, and imitate, the Celeſtial and Animal Heats.

Exemplified in Motion and Reſt.

95. Again; let the Nature ſought be *Motion* and *Reſt*. Here it ſeems a ſettled Diviſion, drawn from the Depth of Philoſophy, that natural Bodies either revolve, move in a ſtrait Line, or continue at Reſt: becauſe Motion is either without End, proceeding to an End, or ſtationary in the End. Now, conſtant Rotation ſeems proper to the Heavenly Bodies; Station or Reſt to the Terreſtrial Globe; and the other Bodies, called Heavy and Light, being out of their natural Places, are carried ſtrait upwards, or downwards, to the Maſſes or Congregations of ſimilar Bodies; thoſe that are light, towards the Heavens, and thoſe that are heavy, towards the Earth: and all this appears neat and plauſible in Diſcourſe.

The irregular Motion of the Comets.

96. But we have an *Inſtance of Alliance* in ſome of the lower Comets; which, tho' they deſcend below the Celeſtial Bodies, yet move irregularly through the various Quarters of the Heavens; as appears by Experience and Obſervation[b].

97. Another

[a] Here is a Foundation laid for a kind of *Chemiſtry* that ſeems to be very little known, or practiſed.

[b] See *Vol.* II. *p.* 43, *&c.*

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97. Another *Inſtance of Alliance* relating to this Subject, is the Motion of the Air, which, between the Tropicks, where the Circles of Rotation are larger, ſeems itſelf to revolve from Eaſt to Weſt [b]. *The Motion of the Air.*

98. The Flux and Reflux of the Sea, might be another *Inſtance* of Alliance, if the Sea was obſerved to revolve, tho' but ſlowly and faintly, from Eaſt to Weſt; yet ſo as to be driven back twice a Day. Upon theſe Suppoſitions, therefore, if it is manifeſt, that this Motion of Rotation does not terminate in the celeſtial Bodies; but is communicated alſo to the Air and Ocean [c]. *Exemplified in the Tides of the Sea.*

99. Again; that Property of aſcending upwards, found in light Bodies, labours under a Defect; and, to this purpoſe, an *Inſtance of Alliance* may be taken from a Bubble of Water: for if Air be thruſt under Water, it haſtily aſcends to the Surface, by the Motion of Impulſe, as *Democritus* calls it, wherewith the deſcending Water impels and raiſes the Air upwards; and not by the Striving or Endeavour of the Air itſelf: but when it comes to the Surface of the Water, the Air is kept from aſcending farther, by a ſmall Reſiſtance it meets with in the Water [d], which will not preſently yield to be diſcontinued, or ſeparated: ſo that the Appetite of the Air to riſe upwards is exceeding weak [e]. *In the Aſcent of light Bodies.*

100. In like manner, let the Nature ſought be *Gravity*. 'Tis a received Difference, that denſe and ſolid Bodies move towards the Centre of the Earth; but rare and light ones towards the Heavens; as if, in each Caſe, it were to their proper Places. But as to theſe Places, tho' the Notion of them prevails in the Schools; yet it is perfectly idle and childiſh to imagine that Place can have any Effect. Whence it is trifling in Philoſophers to aſſert, that if the Earth was perforated, heavy Bodies, let fall in the Perforation, would ſtop at the Centre: for, in that Caſe, a kind of Nothing, or a mere mathematical Point, would have a Virtue and Efficacy [f]; ſo as either to affect other Bodies, or other Bodies to affect it: whereas Body is never affected but by Body. *In Gravity.*

101. This Appetite of Aſcent and Deſcent, is either in the Structure of the Body moved; or in a Sympathy, or Conſent, with ſome other Body. But if any denſe and ſolid Body can be found, which does not move to the Centre of the Earth, this received Difference will be falſified. And if the Opinion of *Gilbert* be admitted, that the magnetic Vir- *Its Cauſe, where.*

[b] See *Vol.* III. *p.* 452, *&c.*

[c] See the Eſſay upon the *Ebbing and Flowing of the Sea*, Vol. III. *ad finem.*

[d] The Water now throwing itſelf into a thin Film, or ſpherical Bubble, to avoid a Solution of Continuity.

[e] Or, according to the late Diſcoveries, none at all. See Mr. *Boyle's Works*, and Sir *Iſaac Newton's Principia*, paſſim.

[f] This is the general Caſe of mathematical Demonſtrations applied to Phyſics; where mere mental Powers, or Forces, are ſuppoſed, inſtead of thoſe that really exiſt in Nature. Hence great Caution is required in the reading of mathematical Writers upon phyſical Subjects; leſt ideal Powers ſhould be inadvertently introduced into Matter. And let it be well conſider'd and remember'd, that what is mathematically juſt and true, may be phyſically falſe and abſurd.

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tue of the Earth, whereby it attracts heavy Bodies, extends not beyond its own Sphere of Activity, which always operates to a certain Diſtance, and no farther; and this be verified by any *Inſtance*; ſuch an *Inſtance* will be an *Inſtance of Alliance* upon this Subject: but at preſent there is no certain and manifeſt *Inſtance* thereof [g].

Exemplified by an Inſtance of Approach, in Water-Spouts.

102. What ſeems to come neareſt to it, is the *Cataracts*, or *Spouts*, which are met with, in ſailing thro' the *Atlantic* Ocean, towards either the *Eaſt* or *Weſt Indies*: for the Quantity and Bulk of Water ſuddenly diſcharged by theſe Cararacts, appear ſo great, that they ſeem to be Collections of Water made before; and to have reſted and remained in theſe Places; and afterwards to be thrown down by ſome violent Cauſe, rather than to fall by the natural Motion of Gravity. Whence we may conjecture, that a denſe and compact Body, of a large Bulk, may remain, at a great Diſtance from the Earth, pendulous, like the Globe of the Earth itſelf, without falling; till it be violently precipitated, or thrown down [h]. But, with regard hereto, we affirm nothing for certain. Only in this, and numerous other Caſes, it may eaſily appear how deficient we are in *Natural Hiſtory*; when, inſtead of verified and aſſured *Inſtances*, we are often obliged to bring bare Suppoſitions, in the way of Examples [i].

In the reaſoning Faculty.

103. Again; let the *Nature ſought* be the *reaſoning Faculty*. A juſt Diſtinction here ſeems made betwixt the human Reaſon, and the Sagacity of Brutes; yet there are ſome *Inſtances* of Actions which Brutes perform, whereby they alſo ſeem to reaſon. Thus it is reported of a Raven, that in a Time of great Drought, eſpying Water in the hollow Trunk of a Tree, where the Orifice was too ſmall for her to enter; ſhe continued to drop ſmall Stones therein, till the Water roſe high enough for her to drink. Whence the *Reaſon of the Raven* afterwards became proverbial.

In Viſion.

104. Laſtly; let the Nature ſought be *Viſion*. Here it ſeems to be an extremely juſt and exact Diſtinction betwixt *Light* and *Colour*, that Light is an original viſible Thing, affording the primary Means of Sight; and that Colour is a ſecondary viſible Thing, not to be ſeen without Light; whence it may ſeem no more than the Image or Modification of Light: and yet there appear to be *Inſtances of Alliance* on both Sides. Thus, for Example, in large Quantities of *Snow*, there ſeems to be a ſomewhat original, lucid Colour [k]; and in the Flame of Sulphur, a Light tending to Colour [l].

APHORISM

[g] Sir *Iſaac Newton*'s Doctrine and Diſcoveries upon this Head, are now generally known. But, perhaps, the *phyſical Cauſe of Gravity* ſtill remains unaſſigned; ſo far, we mean, as it may be.

[h] See the Account of *Spouts* in the *Philoſophical Tranſactions*.

[i] See above, *Part* II. *Aph.* 14.

[k] For Snow affords a conſiderable Degree of Light, by means whereof Men travel by Night in the Northern Regions. See Mr. *Boyle*'s *Hiſtory of Cold*, paſſim.

[l] *Viz.* Blueneſs.

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APHORISM XXXVI.

105. In the *fourteenth* Place come thoſe we entitle *Crucial Inſtances*; deriving the Word from the *Croſſes* ſet up where two Roads meet, to point, and mark out their Separation again. We otherwiſe call them *Deciſive*, and *Indicatory Inſtances*; and, in ſome Caſes, *Oraculous* and *Commanding Inſtances*. (14.) *Crucial Inſtances.*

106. They are of this Kind, that when in the Search of any Nature, the Underſtanding comes to an Equilibrium, as it were, or ſtands ſuſpended, as to which of two or more Natures, the Cauſe of the Nature enquired after ſhould be attributed, or aſſign'd, by reaſon of the frequent and common Concurrence of ſeveral Natures; then theſe *Crucial Inſtances* ſhew the true and inviolable Aſſociation of one of theſe Natures to the Nature ſought; and the uncertain and ſeparable Alliance of the other: whereby the Queſtion is decided; the former Nature admitted for the Cauſe; and the other rejected. *Their Nature.*

107. Theſe *Inſtances* therefore afford great Light, and have a kind of over-ruling Authority; ſo that the Courſe of *Interpretation* will ſometimes terminate in them, or be finiſhed by them. Sometimes, indeed, theſe *Crucial Inſtances* occur, or are found, among thoſe already ſet down; but in general they are new, and expreſly and purpoſely ſought and applied, or after due Time and Endeavours, diſcovered, not without great Diligence and Sagacity. *Their Uſe and Excellence.*

108. For Example; let the Nature ſought be the *Tide of the Sea*; which happens twice in the Day; and is ſix Hours in coming in, and ſix in going out; with a certain Difference coinciding with the Motion of the Moon. Now, the Croſs-way of this Subject lies as follows. *Exemplified in the Tides of the Sea.*

109. This reciprocal Motion muſt of Neceſſity happen either, (1.) from the Waters going forward and backward, like Water moved in a Baſon; which, when it riſes on one ſide, forſakes the other; or, (2.) from the riſing and falling down of the Waters; like Water that riſes in Boiling, and again ſubſides: but to which of theſe Cauſes the Ebbing and Flowing of the Sea ſhould be aſſign'd, is the Doubt. If the former Aſſertion be admitted; when the Sea flows on one Shoar, it muſt neceſſarily ebb, about the ſame time, ſome where on the oppoſite Shoar: the Enquiry therefore is thus brought to a Point. *The Motion of the Tides, referr'd to two Kinds.*

110. Now *Acoſta*, and ſome others, have found, by diligent Obſervations, that on the Coaſt of *Florida*, and the Coaſts of *Spain* and *Africa*, the Sea flows and ebbs at the ſame Times; not contrariwiſe, that when it flows on the Coaſt of *Florida*, it ebbs on the Coaſts of *Spain* and *Africa*; and yet, when carefully conſidered, the *riſing Motion* is not proved by this; and the *progreſſive Motion* diſproved[m]: for it is poſſible *To determine which of the two is the Fact.*

[m] See above, §. 109.

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that the Waters may have a progreſſive Motion; and yet overflow the oppoſite Shoars of the ſame Channel at the ſame time; that is, if the Waters be protruded and driven from another Quarter: which is the Caſe of Rivers ebbing and flowing on both Shoars at the ſame Hours; tho' the Motion here be clearly progreſſive; *viz.* the Motion of the Waters entering at the Mouths of the Rivers from the Sea.

111. It may, therefore, happen, in like manner, that an immenſe Collection of Waters, rolling from the *Indian* Ocean, may be compelled and driven into the Channel of the *Atlantic*; and thus overflow both Shoars at once. It muſt, therefore, be enquired, whether there is any other Channel, through which the Waters may at the ſame times be diſcharged or taken off: and we find there is the South Sea at hand; a Sea not leſs than the *Atlantic*; but rather wider, and of larger Extent; which may ſuffice for this Purpoſe [n].

The Crucial Inſtance *in this Caſe.*

112. And thus, at length, we come to the *Crucial Inſtance* in this Subject: and it lies thus. If it be once certainly diſcovered, that when it is Flood on the oppoſite Coaſts of *Florida* and *Spain*, in the *Atlantic* Ocean, 'tis alſo Flood on the Coaſt of *Peru*, and along the Coaſt of *China*, in the South Sea; then the Queſtion is determined, by this *Deciſive Inſtance*; and the Flux and Reflux of the Sea we enquire after, is ſhewn to happen by a *progreſſive Motion:* for there is no other Sea, or Place left, where the Return or Reflux ſhould be at the ſame time. And this may moſt commodiouſly be known, by enquiring of the Inhabitants of *Panama* and *Lima*, (where the Atlantic and Southern Oceans are ſeparated by a ſmall Iſthmus;) whether the Sea flows on the contrary Parts of that Iſthmus, at the ſame time, or not.

Suppoſing the Earth to revolve.

113. And this Deciſion, or Determination, ſeems certain, upon a Suppoſition of the Stability of the Earth; but if the Earth revolve, there might thence poſſibly happen, from the different Velocity between the rotatory Motion of the Earth, and the Waters of the Sea, a violent Protruſion or Compulſion of the Waters in a Heap upwards, ſo as to make the Flux; and a falling of this Heap downwards, after it could be kept up no longer, ſo as to make the Reflux. But of this a ſeparate Enquiry ſhould be made. Yet upon this Suppoſition, it remains equally certain, that the Sea muſt, of Neceſſity, ebb in ſome Places, at the ſame time that it flows in others.

The Crucial Inſtance *in the riſing Motion of the Sea,*

114. In like manner, let the Nature ſought be the latter of theſe two Motions; *viz.* the *Motion of the Sea ſpontaneouſly riſing up, and ſubſiding again.* If it ſhould happen, that upon a careful Examination, the progreſſive Motion we ſpeak of muſt be rejected; then the Croſs-way of this Nature would lie thus; or go off in three different Roads. For it muſt neceſſarily happen, that this Motion, whereby the Waters riſe in Flowing, and again fall back, in Ebbing, (without any additional Waters

May happen three Ways.

[n] See *Vol.* III. *p.* 621, *&c.*

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ters joining them) muſt proceed in one of theſe three Ways; *viz.* (1.) either this Quantity of Waters muſt ſpring, or flow, from the Bowels of the Earth; and again fall back into its Receptacle; or, (2.) the Quantity of Water is not enlarged, but only the ſame Quantity extended, or rarified, ſo as to poſſeſs a greater Space, or Dimenſion, and again contracted; or, (3.) neither the Quantity nor the Bulk is enlarged; but the Waters, remaining both of the ſame Weight and Denſity, are raiſed by ſome *Attractive Virtue*, that draws them upwards, and calls them forth by Conſent; and then permits them to go again.

115. Therefore, dropping the two other Motions [o], let the Enquiry, for Example, be reduced to the laſt; and the Queſtion will be, whether any ſuch Riſing may happen by a Conſent, or *Attractive Virtue*. And here, in the firſt Place, it is manifeſt, that all the Waters, as they lie collected in the Cavity, or Baſon, of the Sea, cannot be lifted up in one Maſs together, for want of ſomewhat to ſucceed them at the bottom [p]; and therefore, tho' they had any ſuch Appetite of raiſing themſelves, yet it would be broken and prevented by the *Connection of Things*, or as the common Phraſe is, by Nature's Abhorrence, or Dread of leaving a *Vacuum* behind. It remains, therefore, that they muſt riſe in one part; and conſequently be diminiſhed, and give way in another: whence again it will follow, that the *Attractive Virtue*, as it cannot operate equally upon the Whole, muſt operate ſtrongly upon the Middle, ſo as to raiſe the Waters there; and when they are thus raiſed, the Shoars will be ſucceſſively left, or forſaken by the Waters [q]. *The Way of Attraction choſe for an Example.*

116. Thus, at length, we come to the *Crucial Inſtance*. For if it be found, that in the Ebbing of the Sea, the Surface of the Water is more arched, and ſpherical, whilſt the Waters riſe up in the Middle, and leave the Sides, that is, the Shoars, ſhallow; and if in the Flowing, the ſame Surface ſhall become more flat and equal, *viz.* whilſt the Waters return to their former Situation; then it may doubtleſs be admitted, that the Sea riſes by *Attraction*: or otherwiſe it ſhould be totally rejected. And it were not difficult to try, by the Sounding-Line in Streights, whether in the Tide of Ebb towards the middle of the Sea, the Sea be not deeper or higher than in the Tide of Flood. But if this ſhall prove the Caſe, it muſt be obſerved, that, contrary to the common Opinion, the Waters riſe in the Ebb, and fall in the Flood; ſo as in the latter only to cover and overflow the Shores [r]. *The Crucial Inſtance in this Caſe.*

117. Again;

[o] See above, §. 114.

[p] Nothing, by Suppoſition, could here ſucceed but atmoſpherical Air.

[q] As is now generally allowed to be the Caſe. See Sir *Iſaac Newton*'s *Theory of the Tides*, explained by Dr. *Halley* in the *Philoſophical Tranſactions*, N 226.

[r] For more to this purpoſe, ſee the Author's *Eſſay upon the Ebbing and Flowing of the Sea*, Vol. III. p. 614. And compare it with Sir *Iſaac Newton*'s *Principia*, Lib. III. Prop. 24. and Dr. *Gregory*'s *Aſtronomy*, Lib. IV. Prop. 64, 65.

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The apparent diurnal Motion of the Heavens.

117. Again; let the Nature ſought be the *ſpontaneous Motion of Rotation*; and in particular, *whether the Diurnal Motion, whereby the Sun and Stars riſe and ſet, to the Sight, be a true Motion of Rotation in the heavenly Bodies; or only apparent in them, and real in the Earth.* The following may be a *Crucial Inſtance* in this Enquiry. If any Motion, from Eaſt to Weſt, is found in the Ocean, tho' it be ever ſo languid and feeble; if the ſame Motion be found ſomewhat quicker in the Air, eſpecially between the Tropicks, where, becauſe of the larger Circles, it will be more perceptible; if the ſame Motion be found brisk and ſtrong in the lower Comets; if the ſame Motion be found in the Planets, ſo diſpenſed and proportioned, that the nearer it comes to the Earth, the ſlower it proves, and the farther off the quicker; but quickeſt of all in the Sphere of the Fixed Stars; then doubtleſs the Diurnal Motion ſhould be received for real in the Heavens, and the Motion of the Earth be rejected: becauſe it would then be manifeſt, that the Motion from Eaſt to Weſt is perfectly Coſmical[s], and by Conſent of the Univerſe; which having the greateſt Velocity in the greateſt Heights of the Heavens, gradually decreaſes; and at length terminates, and comes to nothing, in what is immovable; *viz.* the Earth.

A Crucial Inſtance therein.

The Copernican *Motion of the Heavens and Earth, whether real or fictitious.*

118. On the other hand, let the Nature enquired into be that other *Motion of Rotation*, famous among Aſtronomers, and oppoſite and contrary to the Diurnal Motion; *viz.* the Motion *from Weſt to Eaſt*; which the Aſtronomers attribute to the Planets and Sphere of the *Fixed Stars*; but *Copernicus* and his Followers aſſign likewiſe to the Earth: and let it be ſought whether there is any ſuch Motion in Nature[t]; or whether it be only imaginary, and ſuppoſed for the Readineſs and Convenience of Calculation, and the ſake of the Beauty and Regularity of a Syſtem; ſo as to make the Celeſtial Motions performed in perfect Circles.

119. This Motion is by no means proved true and real in the higher celeſtial Bodies; neither from hence, that a Planet does not, in its diurnal Motion, return to the ſame fixed Star again; nor from hence, that the Poles of the Zodiac differ from the Poles of the World: which are the two Things whereon this Motion is founded. For, the firſt *Phænomenon* is well ſolved, by the Suppoſition of Antecedence and Dereliction; and the ſecond, by ſpiral Lines: ſo that the Inequality of the Revolution, and the Declination to the Tropicks, may be rather Modifications of the ſame diurnal Motion, than contrary Motions, or performed about different Poles. And if we may here, for once, ſide with the Vulgar, and leave the Fictions of Aſtronomers and the Schools, (who in many Caſes, without Reaſon, offer Violence to the Senſes, and rather affect Obſcurities,) we judge this Motion to be to the Senſe, ſuch as we have

[s] *Viz.* As belonging to the whole Syſtem of Things.
[t] See below, §. 120.

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have above deſcrib'd it, from a Model we once had purpoſely made, of Iron Wire, to repreſent it[u].

120. But it may be a *Crucial Inſtance* in this Enquiry, if it ſhall be found, from any Hiſtory worthy of Credit, that there was a Comet, which did not revolve in a manifeſt Conſent (tho' ever ſo irregularly) with the viſible Diurnal Motion; but rather to the oppoſite Part of the Heavens: for then it will be free to judge that ſome ſuch Motion, contrary to the viſible Diurnal Rotation, may exiſt in Nature. But if nothing of this Kind can be found, ſuch a Motion ſhould not be embraced; but Recourſe be had to other *Crucial Inſtances* about it[w]. *A Crucial Inſtance in the Caſe.*

121. Again; ſuppoſe the Nature ſought was *Gravity*; this will be the *Croſs-Road*[x]. Heavy and ponderous Bodies muſt either have a natural Tendency to the Centre of the Earth, on account of their proper Mechaniſm, or elſe be attracted by the corporeal Maſs thereof; as by a Collection of Bodies of the ſame Nature; and ſo be carried to it by *Conſent*. *The Cauſe of Gravity.*

122. If the latter be the Cauſe, it will follow, that the nearer all heavy Bodies approach to the Earth, the ſtronger, and with the greater Force and Velocity, they will tend to it; but the farther they are from it, the weaker and the ſlower; and this to a certain Diſtance: whence, if they were removed ſo far from the Earth, as that the Virtue thereof could not act upon them; they would remain pendulous, like the Earth itſelf, without falling[y].

123. And, with regard hereto, this may be a *Crucial Inſtance*. Take a Clock that moves by Weights, and another that moves by a Steel Spring; let them be exactly adjuſted, that neither of them may go faſter than the other; place the Clock that goes with Weights, upon the Top of ſome very high Building; keep the other below; then carefully obſerve if the Clock above move ſlower than uſual, on Account of the diminiſh'd Virtue of its Weight. Let the ſame Experiment be made in the deepeſt Mines; to ſhew whether ſuch a Clock will not move faſter there, for the contrary Reaſon; and if the Virtue of the Weights ſhall be found diminiſh'd above, and increas'd below the Surface of the Earth, let the Attraction of the terreſtrial Maſs be received as the Cauſe of Weight, or Gravity[z]. *A Crucial Inſtance therein.*

124. Again; let the Nature ſought be the *Verticity of the magnetic Needle*; and the Croſs-Way will be this. The Touch of the Magnet muſt either, of itſelf, neceſſarily give Iron the Property of pointing North and South; or elſe only excite and prepare, or fit the Iron for the Purpoſe; and the Motion itſelf, (as *Gilbert* conceives, and laboriouſly en- *The Verticity of the Needle.*

[u] See above, §. 117. and *Vol.* II. *p.* 15, *&c.*
[w] See the Author's *Specimen of Animated Aſtronomy*, Vol. II. p. 15—46.
[x] See above, §. 105.
[y] Compare this with Sir *Iſaac Newton*'s *Laws of Motion*. See his *Princip.* in init.
[z] See Sir *Iſaac Newton*'s *Principia*, paſſim.

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deavours to prove,) be given by the Preſence of the Earth: and, therefore, the Particulars which he has, with much Sagacity and Induſtry, diſcover'd, amount to this; that an Iron Nail, which has long continued in the Direction of North and South, may, by that mere Continuance, receive a Verticity; without the Touch of the Magnet: as if the Earth itſelf, tho' it operates weakly, by reaſon of its Diſtance, (for the Surface, or external Cruſt of the Earth, has no magnetic Virtue, according to him,) ſhould yet, in ſo great a Length of Time, ſupply the Defect of the Loadſtone; excite the Iron; and afterwards make it comply, when thus excited. And, again; that if ignited Iron be quenched, pointing in the Direction of North and South, it alſo receives a Verticity, without the magnetic Touch; as if the Parts of the Iron, put in Motion by the Ignition, and afterwards contracting themſelves, in the very Inſtant of quenching, were more ſuſceptive and ſenſible of the Virtue riſing from the Earth, than at another Time; and thence become animated: but theſe Particulars, tho' well obſerved, do not clearly prove his Point.

A Crucial Inſtance in the Caſe.

125. This may be a *Crucial Inſtance* in the preſent Caſe. Mark the Poles of a *Terella*, and place them Eaſt and Weſt; then lay an untouched Needle thereon, and let it remain for ſix or ſeven Days. The Needle, no doubt, whilſt it lies upon the Magnet, will quit the Poles of the World; and conform to thoſe of the Magnet; and, therefore, as long as it remains thus, it points Eaſt and Weſt. But if the Needle ſhall be found, when removed from the *Terella*, or Magnet, and placed upon its Pin, immediately to turn North and South; or by degrees to move into that Direction; then the Earth's Preſence is to be admitted for the Cauſe: but if it turns as before, Eaſt and Weſt; or loſes its Verticity; then that Cauſe ſhould be accounted doubtful; and farther Enquiry be made [a].

The Subſtance of the Moon; the Queſtion.

126. In like manner, let the Subject of Enquiry be the *Subſtance of the Moon*, to determine whether it be rare, flamy, or aerial, as many of the ancient Philoſophers conceived; or ſolid and denſe, as *Gilbert*, with many of the Moderns, and ſome of the Ancients, contend. The Reaſons of the latter Opinion depend chiefly upon this, that the Moon reflects the Rays of the Sun; and that Light appears to be reflected by none but ſolid Bodies. And, therefore, if there are any, thoſe may be reckon'd *Crucial Inſtances*, with regard to this Subject, which demonſtrate that Reflection may be made by a rare Body, as Flame is, provided it be ſufficiently thick.

The Crucial Inſtances therein.

127. And, doubtleſs, one Cauſe of the Twilight, among others, is the Reflection of the Sun's Rays from the upper Part of the Air. We ſometimes ſee the Rays of the Sun reflected in clear Evenings, from the Edges of dewy Clouds, with a more reſplendent Brightneſs than that

[a] See the *Sylva Sylvarum*, under the Article *Magnetiſm*.

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that afforded by the Body of the Moon; and yet it is not certain that thoſe Clouds are collected into a denſe Body of Water. So likewiſe, we ſee that the dark Air behind a Window, by Night, reflects the Light of a Candle, as well as a denſe Body.

128. Experiment alſo ſhould be made of tranſmitting the Sun's Rays thro' a Hole, upon a duſky, or blue Flame: for the free, open, and unconfined Rays of the Sun, falling upon obſcure Flames, ſeem to deaden them; and make them appear rather like white Fumes than Flames [b]. And theſe are Inſtances that occur for the preſent, to ſhew the Nature and Uſe of the *Crucial Inſtances*, with regard to this Subject: tho', doubtleſs, better may be found for the purpoſe. But let it always be obſerved, that a Reflection from Flame is not to be expected, unleſs the Flame be of ſome Depth, Thickneſs, or Body; for otherwiſe it inclines to Tranſparency. But this is to be held certain, that Light, in an uniform Subſtance, is always either received and tranſmitted, or reflected [c].

The Motion of Projectiles.

129. Again; let the Nature ſought be *Projectile Motion*, as the Motion of a Dart, an Arrow, a Bullet, *&c.* thro' the Air. This Motion the Schools, according to their Cuſtom, have ſlightly paſs'd over, eſteeming it ſufficient to diſtinguiſh it by the Name of *Violent Motion*, from that they call *Natural*; and for the firſt Impulſe, ſatisfying themſelves with this, that two Bodies cannot be in the ſame Place, otherwiſe a Penetration of Dimenſions would enſue; without at all regarding the continued Progreſs of this Motion [d].

The Croſs-Way thereof.

130. The Croſs-Way here lies thus. This Motion is either cauſed by the Air propelling and gathering itſelf behind the Projectile; as the Water does behind a Ship; and the Winds behind the Chaff which they blow away, *&c.* or elſe by the Parts of the Body not ſuſtaining the Impulſe; but urging forwards to relax themſelves, by Succeſſion, from the impelling Force. *Fracaſtorius*, and nearly all thoſe who have made any ſubtile Enquiry into this Motion, take the firſt *Path*: nor can it be queſtion'd, but the Air has ſome Share herein; tho', doubtleſs, the other Motion is the true one; as appears from numerous Experiments.

A Crucial Inſtance in the Caſe.

131. But, among the reſt, this may be a *Crucial Inſtance* to the purpoſe; that a Piece of ſtubborn Iron Plate, Wire, a Quill, or the like, being bent in the middle by the Fingers, will when let go, ſpontaneouſly fly back. Now, it is plain, that this Motion cannot be attributed to the Air, collecting itſelf behind the Body; becauſe the Origin of the Motion is in the Middle of the Plate, Wire, or Quill; and not in the Extremities, or Ends [e].

[b] See Sir *Iſaac Newton's Optics*, paſſim; and Dr. *Hook's Lectures of Light.*
[c] See Mr. *Boyle of Colours*, and Sir *Iſaac Newton's Optics.*
[d] See *Vol.* III. *p.* 607.
[e] See the *Eſſay* upon *Violent* and *Projectile Motion*, Vol. III. p. 606, *&c.*

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The Expanſion of Gunpowder into Flame.

132. Again; let the Nature ſought be the *rapid and powerful Expanſion of Gunpowder into Flame*; whereby ſuch vaſt Maſſes of Building are overturn'd; and ſuch great Weights thrown to a conſiderable Diſtance; as we ſee ſee in the Springing of Mines, the Firing of Mortars, *&c.* The double Road here lies thus. This Motion is either excited by the mere Appetite of the Body, to dilate itſelf, after it is ſet on Fire; or by a mix'd Appetite of the crude Spirit of the Nitre, which, with great Rapidity, avoids and flies from Fire; and violently burſts out from the midſt thereof, as from a Priſon. The Schools, and the vulgar Opinion, here conſider only the former Appetite: for Men have thought they philoſophized notably, in aſſerting Flame to be endowed, by the Form of the Element, with a neceſſary Quality of poſſeſſing a larger Space, than the ſame Body poſſeſs'd when it had the Form of Gunpowder; and that this Motion muſt from thence enſue.

The Croſs-Road.

133. But here they obſerve not, that, tho' this be true, upon Suppoſition the Flame is ready generated; yet the Generation of Flame may be hinder'd by a Maſs of Matter, able to ſuppreſs and ſuffocate it; ſo that the Thing may not be reduced to the Neceſſity they ſpeak of. Indeed, as to the Neceſſity of the Expanſion, and the conſequent Exploſion, or Diſcharge of the Bullet, or obſtructing Body, when the Flame is generated; they judge rightly: but this Neceſſity is plainly avoided, if the ſolid Body ſuppreſs or prevent the Flame, before it is generated. And we ſee, that Flame, eſpecially in its firſt Generation, is ſoft, and gentle; requiring a Cavity wherein to play, and exert itſelf; whence ſuch a Violence cannot be attributed to Flame of itſelf.

134. Without Doubt, the Generation of this flatulent Flame, or, as it were, fiery Wind, ariſes from a Conflict of two Bodies, that have very different Natures; the one being highly inflamable, which is the Nature powerful in Sulphur; the other highly impatient of Flame, which is the Caſe in the crude Spirit of the Nitre: whence a wonderful Conflict ariſes; the Sulphur immediately catching all the Flame it is capable of; and the Spirit of Nitre burſting forth with all its Violence; at the ſame Time dilating itſelf, as Air, Water, and all crude Bodies do, when affected by Heat; and whilſt it breaks forth, and flies off every Way, it blows up the Flame of the Sulphur, as it were, with internal Bellows: the Willow-Coal, in the Compoſition, ſerving for little more, than to incorporate, and commodiouſly unite, the Sulphur and Salt-Petre together[f].

The Crucial Inſtances in the Caſe, of two Kinds.

135. But the *Crucial Inſtances* upon this Subject might be of two Kinds; the *one* with regard to thoſe Bodies which are moſt inflammable, as Sulphur, Camphire, Naphtha, *&c.* with their Mixtures; and which, if not otherwiſe

[f] See the *Eſſay upon the Cauſe of the Motion of Exploſion in Guns and Gunpowder*, Vol. III. p. 611.

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otherwiſe hindered, take Flame more eaſily than Gunpowder: from whence it is plain, that the Appetite of Inflammability does not, of itſelf, produce this ſtupendous Effect. *The firſt.*

136. The *other* Kind is, of thoſe Bodies which reſiſt and repel Flame, as all Salts do: for we find, when theſe are thrown into the Fire, a watery Spirit breaks out, with a crackling Noiſe, before they take Flame; which the more ſtubborn kind of Leaves[g] do alſo, in a gentler manner; their aqueous Part burſting forth before their oily Part takes Flame. But this appears more eminently in Quickſilver, which is not improperly called a foſſil, or metallic Water: for Quickſilver, without taking Flame, almoſt rivals the Force of Gunpowder, by bare Eruption and ſimple Expanſion[h]; and being mix'd with *Gunpowder*, is ſaid to increaſe the Strength thereof[i]. *The ſecond.*

137. Laſtly, let the Subject of Enquiry be the *Tranſitory Nature of Flame, and its momentary Extinction:* for the flamy Nature does not with us appear permanent, and at a ſtay; but to be momentarily generated, and preſently after extinguiſhed again. It is manifeſt, that in the Flame here ſuppoſed to be continued and durable, the Duration is not of the ſame individual Flame; but happens by a Succeſſion of new Flame, regularly generated, without continuing numerically the ſame; as eaſily appears from hence, that if the Fewel or Aliment be taken away, the Flame preſently goes out. *The tranſitory Nature of Flame.*

138. The two Ways in this Subject lie thus. The momentaneous Nature proceeds either from a Remiſſion of the Cauſe that firſt produced it, as in Light, Sounds, and thoſe called violent Motions; or elſe from hence, that Flame, in its own Nature, cannot ſubſiſt here below without ſuffering, and being deſtroy'd, by the contrary Natures around it. *The Croſs-Road.*

139. This, therefore, may be a *Crucial Inſtance* in the Caſe. We ſee in great Conflagrations, that Flames will aſcend to a conſiderable Height; for the wider the Baſis of the Flame, the higher its Vertex riſes; and therefore Extinction appears to begin about the Sides, where the Flame is compreſs'd, and oppoſed by the Air: but the inner Parts of the Flame, untouch'd by the Air, and every where ſurrounded by other Flame, remain numerically the ſame; without being extinguiſh'd, till they come to be gradually ſqueezed by the Air diffuſed about the Sides: and therefore all Flame is pyramidal, or large in its Baſis, about the Fewel, but ſharp at the Vertex; the Air being its Antagoniſt, and not ſupplying Fewel. But the Smoak, which is narrower about the Baſis, dilates itſelf in aſcending, and becomes like an inverted Pyramid; becauſe *A Crucial Inſtance in the Caſe.*

[g] Such, in particular, as Ivy, Bays, *&c.*

[h] That is, ſuppoſing the Quickſilver cloſe confined and heated, as it might be, to ſhew the Thing, in a Gun-barrel, with the Touch-hole ſtopped, and the Charge hard rammed down with Paper, *&c.*

Conſider of the *Aurum Fulminans*; the common *Pulvis Fulminans*; the Ways of making the *Mercurius Fulminans*; and the Means of increaſing the Strength of Gunpowder, by *Salt of Tartar, Precipitated Metals*, &c.

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becauſe the Air receives Smoak, but compreſſes or ſqueezes Flame. And let no one fondly imagine, that Flame is Air ſet on fire; for Flame and Air appear perfectly heterogeneous [k].

A ſecond Crucial Inſtance.

140. We might have a more accurate *Crucial Inſtance* to this Purpoſe, if the Thing could be manifeſted by Flames of different Colours. Take, therefore, a ſmall metalline Diſh, and fix therein a ſmall Wax-taper lighted; ſet the Diſh in a wider Veſſel, and pour Spirit of Wine round it, in a moderate Quantity, ſo as not to touch the upper Rim or Edge of the Diſh; fire the Spirit of Wine, and this will exhibit a bluiſh Flame; but the Wax-taper one that is yellower: and now let it be obſerved, whether the Flame of the Taper remains pyramidal; which may eaſily be diſtinguiſhed through the blue-colour'd Flame of the Spirit of Wine, (for Flames do not preſently mix as aqueous Liquors do;) or whether it tends not to a ſpherical Figure; as there is nothing preſent to deſtroy or compreſs it. And if the latter prove to be the Caſe, it may be held certain, that Flame remains numerically the ſame, ſo long as it is ſurrounded by other Flame, without feeling the hoſtile Effect of the Air [l].

Theſe Crucial Inſtances, why ſo largely dwelt upon.

141. And ſo much for *Crucial Inſtances*; upon which we have been the fuller, that Men may gradually learn and accuſtom themſelves to judge of Nature by *Inſtances of the Croſs*; and *Experiments of Light*; and not by *probable Reaſonings* [m].

Aphorism XXXVII.

Inſtances of Divorce.

142. In the *fifteenth* Place, among *Prerogative Inſtances*, come the *Inſtances of Divorce*; which indicate the Separation of ſuch Natures as frequently meet or come together. Theſe differ from the *Subjunctive Kind*, or *Inſtances* ſubjoined to *Accompanying Inſtances* [n]; becauſe thoſe indicate the Separation of a Nature from a Concrete, wherein it familiarly appears; but theſe the Separations of one Nature from another. Theſe alſo differ from *Crucial Inſtances*, as determining nothing; but only admoniſhing us of the Separability of one Nature from another.

Their Uſe.

143. Their Uſe is to diſcover *falſe Forms* [o]; and to diſſipate ſuperficial Notions and Speculations ariſing from obvious Things; ſo that they add, as it were, *Ballaſt to the Underſtanding.*

144. For

[k] Dr. *Hook*'s *Lectures of Light*, paſſim.

[l] This is a ſubtile Experiment, and of great Moment. See *Vol.* III. *p.*

[m] Which are Endleſs, and lead to no ſolid Determinations. And by this Time, if the Reader has been tolerably attentive and diligent, he will have a clear Perception of the ſuperior Excellence and Uſe of this *Doctrine of Prerogative Inſtances*; and be enabled, in ſome tolerable Degree, to proſecute *Enquiries* by their Means; in order to the full Inveſtigation and Diſcovery of the *Forms* of Things. But the Author's *larger Examples*, that occur in the third *Volume*, will render the whole ſtill plainer.

[n] See above, *Aph.* 33 and 34.

[o] See below, §. 144.

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144. For Example, let the Subject of Enquiry be thoſe four Natures which *Teleſius* calls *Chamber-fellows*; as if they came out of the ſame Room; *viz.* *Heat*, *Light*, *Rarity*, and *Mobility*, or Aptneſs to Motion. Now tho' theſe Natures ſeem to be nearly related, yet there are many *Inſtances of Divorce* found among them: for, (1.) the Air is rare, and ready to Motion, but not hot or ſhining; (2.) the Moon is lucid, without Heat; (3.) Water is hot without Light; (4.) the Motion of the magnetic Needle in the Compaſs, is ſwift and nimble; yet that Needle is a cold, denſe and opaque Body: and there are many other Examples of this Kind [p]. *Exemplified in Heat, Light, Rarity and Mobility.*

145. Again; let the Subject of Enquiry be the *Corporeal Nature, and Natural Action:* for Natural Action ſeems to be no where found, but as it ſubſiſts in ſome Body or other: and yet with regard hereto, there may, perhaps, be *Inſtances of Divorce*; as in the magnetic Action ſuppoſe, where Iron is attracted to the Loadſtone; and heavy Bodies to the Globe of the Earth; to which may likewiſe be added ſome other Operations performed at a Diſtance. For this Kind of Action is both performed in Time, by ſucceſſive Moments, or not inſtantaneouſly; and in Place, by Degrees, and through Space: whence, conſequently, there is ſome Moment of Time, and ſome Diſtance of Place, wherein this Virtue, or Action, muſt be in the middle, between the two Bodies that cauſe the Motion. *In the Corporeal Nature, and natural Action.* *Magnetical Action an Inſtance of Divorce.*

146. The Conſideration, therefore, amounts to this; whether the Bodies, which are the Boundaries of the Motion, diſpoſe or alter the intermediate Bodies, ſo as that by Succeſſion, and real Contact, the Virtue may ſlide from Point to Point; and in the mean time exiſt in the intermediate Body: or whether there be nothing of this Kind, beſides the Bodies, the Virtue, and the Space, or Diſtance.

147. Now in the Caſe of the Rays of Light, Sounds, Heat, and ſome other Things operating at a Diſtance; 'tis probable, that the intermediate Bodies are affected and altered: the rather becauſe a qualified Medium is required to convey ſuch Operations. But the magnetic or attractive Virtue paſſes through all Mediums indifferently; for it is not hindered by any one. But if this Virtue or Action is independant on the intermediate Body; it follows, that it is a natural Power, or Action, ſubſiſting, for a Time, in ſome Place, without a Body; ſince it neither ſubſiſts in the terminating nor intermediate Bodies. And hence the magnetic Action may be an *Inſtance of Divorce*, in the Subject of *Corporeal and Natural Action.*

148. To this may be added, by way of Corollary, the following conſiderable Diſcovery; *viz.* that by philoſophizing, even according to Senſe, a Proof may be had of the Exiſtence of ſeparated and incorporeal Beings and *A Corollary from it.*

[p] By comparing this with *Aph.* 4. of the preſent Part, the Uſe of theſe *Inſtances*, in diſcovering *falſe Forms*, will ſufficiently appear.

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and Subſtances: for if natural Virtues and Actions, flowing from a Body, may ſubſiſt without a Body, for ſome time, in Space, or Place; 'tis poſſible that ſuch Virtues or Actions may proceed originally from an incorporeal Subſtance: for a corporeal Nature ſeems no leſs required to ſupport and convey, than to excite and generate, a natural Action.

Aphorism XXXVIII.

Inſtances of Light.

149. Now follow five *Orders of Inſtances*, which by one general Expreſſion, we term *Inſtances of Light*, or *Inſtances of primary*, and *original Information*; being ſuch as adminiſter to the Senſes: for as all *Interpretation of Nature begins from Senſe*; and, from the *Perception of the Senſes*, leads, in a ſtrait, continued and guarded Path, to the *Perceptions of the Underſtanding*, which are true *Notions* and *Axioms*; it neceſſarily follows, that the more copious and exact the Repreſentations or Informations of the Senſe ſhall be, the more eaſy and ſucceſsful every Thing elſe will prove [q].

Ranged into five Orders.

150. The *firſt* of theſe five Orders of *Inſtances of Light*, are ſuch as ſtrengthen, enlarge and rectify the immediate Actions of the Senſes. The *ſecond*, are ſuch as bring down inſenſible Things to ſenſible. The *third*, are ſuch as indicate the continued Proceſſes, or Series, of thoſe Things and Motions, which remain generally unobſerved in their End or Period. The *fourth*, ſubſtitute ſomewhat to the Senſe, in thoſe Caſes that leave it perfectly deſtitute. And the *fifth*, raiſe the Attention and Edge of the Senſe; and at the ſame time limit the Subtilty of Things. To each of theſe five Kinds we ſhall ſpeak in their Order [r].

Aphorism XXXIX.

Inſtances of Entrance.

151. In the *ſixteenth* Place, we therefore range *Inſtances of Entrance*, or *Inſtances of the Portal*; by which we mean thoſe that aſſiſt the immediate Actions of the Senſes. But of all the Senſes, the Sight has the chief Prerogative in Point of Information; and, therefore, Helps are principally to be ſought for the Improvement of the Sight. And theſe Helps may appear of three Kinds; *viz.* (1.) ſuch as enable us to ſee Things that are otherwiſe inviſible; (2.) ſuch as enable us to ſee Things at a greater Diſtance; and, (3.) ſuch as cauſe to ſee more exactly and diſtinctly.

Of three Kinds for the Sight.

Viz. (1.) Microſcopes.

152. (1.) Of the firſt Kind are the newly invented *Microſcopes*, which ſhew the latent, and otherwiſe inviſible ſmall Parts of Bodies; and their ſecret Textures and Motions, remarkably increaſed in the Magnitude of the Object; by means whereof, the exact Figure and Lineaments of the Body

[q] This Paragraph being fundamental and leading, requires to be well underſtood and remembred; the Buſineſs of raiſing *Axioms* depending upon it.

[r] See below, *Aph.* 39---45.

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Body of the minuteſt Creatures; ſuch as Flies, Fleas, Mites, *&c.* as alſo Colours and Motions, before inviſible, may be ſeen, in a delightful, and ſurprizing manner[s].

153. And here, as is uſual in new and ſtrange Diſcoveries, a ſuperſtitious Obſervation has crept into the Minds of Men; as if this Invention of Microſcopes did Honour to the Works of Nature, but Diſhonour to the Works of Art, by ſhewing the one much finer than the other[t]: whereas the Truth only is, that natural Textures are much more ſubtile, than artificial ones. For theſe Microſcopes are only of Uſe in the Caſe of minute Objects; ſo that if *Democritus* had ſeen them, he would perhaps have rejoiced, and imagined a Way was now diſcovered for rendering the Atoms viſible, which he pronounced to be no Object of Sight. *The Error to which they have given occaſion.*

154. But the Unſuitableneſs and Inſufficiency of theſe *Microſcopes*, except for very minute Bodies, (and then only when ſuch minute Bodies are not Parts of larger) deſtroys the Uſe of the Invention: which, if it cou'd be extended to large Bodies, or to ſmall Particles of large Bodies, in the Piece, after the Manner of making a Piece of fine Lawn, appear like a Net; ſo as that by this Means the latent ſmall Particles and Inequalities of Gems, Liquors, Urine, Blood, Wounds, and many other Things might be diſtinguiſhed; great Conveniencies would doubtleſs ariſe from the Diſcovery[v]. *Inconvenience of the Contrivance.*

115. Of the *ſecond* Kind, are *Teleſcopes*; which were nobly attempted and diſcovered by *Galilæo*; by means whereof, as by Boats or little Ships of Intelligence, a nearer Commerce may be opened and carried on with the Celeſtial Bodies[w]. For by the Help of theſe Glaſſes, (1.) the *milky Way* appears to be a Knot or Cluſter of little Stars, perfectly ſeparate and diſtinct; of which the Ancients had but a bare Suſpicion. (2.) And again, by their Means it ſhould ſeem, that the Planetary Regions contain more Stars beſides the direct Planets[x]; and that the Heavens may begin to be ſpangled with Stars at a great Diſtance below the Sphere of the Fixed Stars; tho' with ſuch only as are inviſible, without the Help of Teleſcopes. And, again; (3.) by their Aſſiſtance, we may behold the Motion of thoſe ſmall Stars, or Satellites, about the Planet *Jupiter*; from whence it may be conjectured, that the Revolutions of the Stars have regard to ſeveral Centres[y]. (4.) Again; by their Means, the lumi- (2.) *Teleſcopes.* *The Diſcoveries made by their Means.*

[s] See Dr. *Hook*'s *Micrographia*, Dr. *Power*'s *Experiments*, and *Leuwenhoeck*'s Obſervations, *paſſim*.

[t] Becauſe ſome Microſcopical Obſervers, upon viewing the Point of a Needle, or other the fineſt Works of the Hand, and comparing theſe with the Hairs, or downy Feathers of Animals, *&c.* find the former to be courſe, rough, and unfiniſhed, in compariſon of the latter; and thence fondly extol the Excellence of the Works of Nature, above thoſe of Art.

[v] But no conſiderable Improvement of this Kind has hitherto appeared; the greateſt Magnifiers being the ſmalleſt Globules, or Spheres of Glaſs. See Sir *Iſaac*'s *Newton*'s *Optics*; Dr. *Hook*'s *Lectures of Light*, and *Micrographia*; and the *Elements of Dioptrics* in *Wolfius*'s *Elementa Matheſeos Univerſæ*. Tom. II. p. 284.

[w] See *Vol.* III. *p.* 17.

[x] *Viz.* The *Satellites of* Jupiter, *&c.*

[y] As in Sir *Iſaac Newton*'s *Syſtem* they are found to have.

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nous and opaque Inequalities are more diſtinctly perceived and aſcertained in the Moon; from whence a geographical Deſcription might be made thereof[z]. (5.) And, laſtly; by means of theſe Glaſſes, Spots in the Sun, and other Things of that Kind, appear to the Sight: all which are, doubtleſs, noble Diſcoveries, ſo far as they may be ſafely depended upon for real. But, indeed, I the rather incline to ſuſpect them, becauſe Experience ſeems wholly to reſt in theſe few Particulars, without diſcovering, by the ſame Means, numerous others, equally worthy of Search and Enquiry[a].

(3.) *Inſtruments of Sight and Menſuration.*

156. (3.) Of the *third* Kind, are thoſe *Staffs*, *Aſtrolabes*, and the like Inſtruments, for meaſuring Diſtances; which not only enlarge and improve the Sight; but alſo rectify and direct it[b]. And as for the *Inſtances* that aſſiſt both this, and the other Senſes, in their immediate and individual Actions, without affording any Information beyond that Aſſiſtance; we here omit them, as making nothing to the preſent Purpoſe. And hence we do not mention the Contrivances for correcting any particular Defect of the Sight; becauſe theſe afford no farther Information.

Aphorism XL.

(17.) *Summoning Inſtances.*

157. In the *ſeventeenth* Place, among *Prerogative Inſtances*, come thoſe we call *Summoning or Citing Inſtances*; borrowing the Term from the Bar; where Perſons are ſummoned, or cited to appear, who did not appear before: And, accordingly, theſe Inſtances bring down inſenſible Things, to ſuch as are ſenſible.

Cauſe Things to appear.

The Ways wherein Things eſcape the Senſes.

158. Things eſcape the Senſes, either, (1.) through the Diſtance of the Object, as to Place; (2.) through the Interception of interpoſing Bodies; (3.) becauſe the Object is unfit to make an Impreſſion upon the Senſe; (4.) becauſe the Object is not ſufficient, in Quantity, to ſtrike the Senſe; (5.) becauſe the Time is not proportionate, ſo as to actuate the Senſe; (6.) becauſe the Percuſſion of the Object is not endured by the Senſe; (7.) and laſtly; becauſe an Object before detained, and poſſeſs'd the Senſe, ſo as to leave no room for a new Motion.

159. And theſe ſeveral Ways chiefly regard *Viſion* in the firſt Place, and *Touch* in the ſecond: for theſe two Senſes give Information at large, and of common Objects; but the three others give little Information, beſides what is immediate, and relates to their correſponding Objects.

Subſtitution to be uſed in the firſt Way.

160. In the *firſt* Way there is no reducing the Object to Senſe, except, when Things cannot be perceived by reaſon of the Diſtance, others are uſed, or ſubſtituted for them, which may excite and ſtrike the Senſes at

[z] As is done by *Hevelius*, in his *Selenographia*.

[a] See the Author's *Eſſay towards a Philoſophical Hiſtory of the Heavens*, Vol. II. p. 15. And Sir *Iſaac Newton's Planetary Syſtem*, in the third Book of his *Principia*.

[b] The Inſtruments of this Kind are numerous; and their Deſcriptions frequent in the Writers upon *Inſtruments*, *Levelling*, *Practical Mathematics*, *Navigation*, &c. See theſe Writers enumerated at the End of the ſecond Tome of *Wolfius's Elementa Matheſeos Univerſæ*.

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at a great Diſtance: as in giving Signals by the lighting up of Fires, the ringing of Bells, *&c.*

161. In the *ſecond* Way, a Reduction is made, when ſuch Things as lie conceal'd within, by reaſon of the Interpoſition of Bodies that cannot be commodiouſly open'd, are brought to the Senſes, by means of thoſe Things which are upon the Surface, or flow from within; as the State of the human Body is known by the Pulſe, or Urine, and the like. *Reduction in the ſecond.*

162. But the Reduction in the *third and fourth* Ways, regard numerous Particulars; and ought on all ſides to be collected in Enquiries. Thus, for Example, it appears that the Air, the Spirit, and Things of that Kind, which in their whole Subſtance prove light and ſubtile, can neither be perceived nor touched: whence in the Enquiry after ſuch Bodies, we muſt neceſſarily uſe *Reductions*. *The Reductions required in the third and fourth.*

163. Suppoſe, therefore, the Subject of Enquiry were the *Action and Motion of the Spirit included in tangible Bodies:* for every tangible Body, with us, contains an inviſible and untangible Spirit, over which the Body is drawn like a Garment. And hence ariſe thoſe three powerful Springs, and that wonderful Proceſs, of the Spirit in tangible Bodies. For, (1.) the Spirit being diſcharged out of a tangible Body, the Body contracts and dries; (2.) whilſt detained, it makes the Body tender, ſupple, and ſoft; and, (3.) being neither totally diſcharged, nor totally held in, it informs, faſhions, aſſimilates, ejects, organizes, *&c.* And all theſe are rendered ſenſible by viſible Effects[c]. *Examplified in the Action of the Spirit of Bodies.*

164. For in every tangible, inanimate Body, the included Spirit firſt multiplies itſelf, and, as it were, feeds upon thoſe tangible Parts which are moſt diſpoſed and prepared for that Purpoſe; and thus digeſts, works, and converts them into Spirit; till at laſt they fly off together. *This Action deſcribed.*

165. And this Buſineſs of making and multiplying the Spirit, is brought down to the Senſe, by the Diminution of the Weight of the Body: for in all Drying, part of the Quantity goes off; which is not only the Spirit that pre-exiſted in the Body, but a Part of the Body itſelf; that was before tangible, and is now newly converted into Spirit: for the pure Spirit has no Gravity[d]. *How made ſenſible.*

166. The Emiſſion, or Exit, of this Spirit is rendered ſenſible by the Ruſting of Metals; and other Corruptions or Putrefactions of that Kind; which ſtop before they come to the Rudiments of Life: for in the more compact Bodies, the Spirit finds no Pores and Paſſages, through which to eſcape; and is therefore obliged to protrude the tangible Parts, and *By the ruſting of Metals.*

[c] This requires to be well underſtood; and is explained in what follows: but for farther Information, ſee the *Sylva Sylvarum*, and *Hiſtory of Life and Death*, paſſim.

[d] In the Air at leaſt; as being ſpecifically lighter than Air. But whether any thing farther be here meant by Spirit having no Gravity, will beſt appear from the Author's *Hiſtory of Life and Death*; the *Hiſtory of Condenſation and Rarification*, &c. See in particular, *Vol.* III. *p.* 419, 420, 422, 524, 556, *&c.* See alſo below, §. 175.

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drive them before it; ſo as to make them iſſue at the ſame time: whence proceeds Ruſt, and the like [e].

The ſhrinking of Bodies. 167. But the Contraction of the tangible Parts, after ſome of the Spirit is diſcharged, upon which Drineſs enſues, is made ſenſible by the increaſed Hardneſs of the Body; but much more by the ſubſequent cracking, or ſplitting of the Body; and the contracting, wrinkling, and and overwrapping of the Parts. Thus the Parts of Wood crack, or ſplit aſunder, and are contracted; Skins wrinkle; and if the Spirit be ſuddenly forced out by the Heat of Fire, they ſhrink ſo faſt as to curl and roll themſeves up [k], *&c.*

Whence the different Effects of Heat. 168. On the other hand, where the Spirit is detained, and yet dilated and excited by Heat, or ſomething analagous thereto, (as happens in the more ſolid or tenacious Bodies) then the Body is either ſoften'd, as in the Caſe of ignited Iron; or flows, as in melted Metals; or liquifies, as in diſſolved Roſin, Wax, *&c.* therefore theſe contrary Operations of Heat, hardening ſome Bodies, and liquifying others, are eaſily reconciled; becauſe in the firſt Caſe the Spirit is driven out; but agitated and detained in the ſecond: the latter being the proper Action of Heat and Spirit; and the former the Action of the tangible Parts, ſucceeding upon the Emiſſion of the Spirit.

The Formation of Organical Bodies. 169. But where the Spirit is neither quite detain'd, nor quite diſcharged; but only attempts and tries to force its Priſon; and readily meets with ſuch tangible Parts as will obey, and yield to its Motions; ſo that wherever the Spirit leads, they follow it; then it is that an organical Body is formed; with its diſtinct Parts, or Limbs; and that all the vital Actions enſue, as well in Animals as Vegetables.

How brought down to Senſe. 170. And theſe Operations are principally brought down to the Senſe, by diligently obſerving the firſt Beginnings, Rudiments, Strugglings, or Tendencies towards Life, in the little Creatures bred from Putrefaction; as in the Eggs of Ants, in Worms, Flies, Frogs after Rain, *&c.* For there are required to Vivicafition, both Gentleneſs of Heat, and Tenacity of Body; that the Spirit may neither break forth too haſtily; nor be too much confined, by the Stubbornneſs of the Parts; but rather be able to mould and faſhion them, like Wax.

Three different Kinds of Spirits in Bodies, found by Reduction. 171. Again; that noble Difference of the Spirit, which has regard to ſo many Things, is brought and ſubmitted, as it were, to View, by numerous

[e] Ruſt, is now uſually ſuppoſed to be occaſioned by the external Air, or ſomething contained therein, that preys upon, and in part diſſolves the external Surface of the Metal. Here then is what the Author calls a *Croſs-Road*, that requires a *Crucial Inſtance*. Let Trial, therefore, be made, whether Iron will ruſt in an exhauſted Receiver. And, by the way, let not the Examples here produced, as Illuſtrations of the Doctrine of *Prerogative Inſtances*, be ſuppoſed any way intended as Deciſive: their Deſign being rather logical than philoſophical; ſo as to ſhew the way of proſecuting Enquiries; and not themſelves to ſerve as Enquiries. And in this View ſee the ſeveral regular *Enquiries* of the Author in the third *Volume*.

[k] See *Vol.* III. *p* 556, *&c.*

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numerous *Summoning* or *Reductory Inſtances* [f]. This Difference, we mean, is that of the *truncate Spirit*, *the Spirit ſimply ramous*, and the *Spirit both ramous and cellulous*: the *firſt* whereof is the Spirit of all inanimate Bodies; the *ſecond* the Spirit of Vegetables; and the *third* the Spirit of Animals [g].

172. In like manner, it appears, that the more ſubtile Textures and Structures of Things, (tho' viſible and tangible in their entire Bodies,) are neither ſeen nor felt; and, therefore, in theſe alſo the Buſineſs of Information proceeds by *Reduction*. But the moſt radical and primary Difference of Structures, is taken from the greater or leſs Quantity of Matter contained in the ſame Space or Dimenſion: for the other Structures depending upon the Diſſimilarity of the Parts contained in the ſame Body, and their Situations, are but ſecondary, in reſpect to thoſe. *The more ſubtile Textures made ſenſible by Reduction.*

173. Thus, let the Subject of Enquiry be the *Expanſion or Contraction of Matter in Bodies*, *reſpectively*; to diſcover what Quantity of Matter fills what Quantity of Space in each. Now, there is nothing truer in Nature, than thoſe Twin-Propoſitions, that *Nothing can never make Something*; and that *Something can never be reduced to Nothing* [h]: but the entire Quantity, or total Sum of Matter in the Univerſe, ſtill remains the ſame, without Increaſe, or Diminution. 'Tis alſo as certain, that a greater or leſs Quantity of Matter is contain'd under the ſame Space, or Dimenſions, according to the Difference of Bodies [i]. Thus Water contains more Matter than Air: whence to aſſert, that an equal Bulk of Water is convertible into an equal Bulk of Air; is to aſſert, that ſomething is reducible to nothing: as, on the other hand, to aſſert, that a certain Bulk of Air may be turned into an equal Bulk of Water; is the ſame, as to aſſert, that ſomething may be made out of nothing. And from this greater or leſs Quantity of Matter, thoſe Notions of Denſity and Rarity, which are variouſly and promiſcuouſly received, may be corrected, or new ones juſtly derived. *The Denſity and Rarity of Bodies.*

174. It muſt be likewiſe allowed as certain, that this greater or leſs Quantity of Matter we ſpeak of, contained in Bodies, may, by Compariſon, be brought to Calculation; and the exact, or nearly exact, Proportion determined. Thus, for Example, we ſhould not greatly differ from the Truth, to ſay, that a given Bulk of Gold contain'd about two and twenty times as much Matter, as an equal Bulk of Spirit of Wine; or that a Bulk of Spirit of Wine equal to the Bulk of Gold, muſt poſſeſs about two and twenty times as much Space as the Gold [k]. *That the different ſpecific Gravities of Bodies are determinable.*

175. But

[f] See the *Sylva Sylvarum*, paſſim.
[g] See the *Hiſtory of Life and Death*, paſſim.
[h] See *Vol.* III. *p.* 505, &c.
[i] On this is founded the Uſe of the ~~*Hydroſtatical Balance*~~. See the Author's *Hiſtory of Condenſation and Rarifaction*, paſſim.
[k] See the Author's Table of the *Specific Gravities of Bodies*, Vol. III. p. 512, 513.

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The Denſity of Matter made ſenſible by Weight.

175. But the Denſity of Matter, and the Proportions thereof, are made ſenſible by Weight; for Weight correſponds to Quantity of Matter; with regard to the tangible Parts of Bodies: but Spirit, and its Quantity of Matter, is not cognizable by the Balance; becauſe it rather diminiſhes than increaſes Weight[l]. And, with this View, we have made a TABLE, to ſhew the ſpecific Gravities, or Weights and Bulks, of all the Metals; the principal Stones, Woods, Liquors, Oils, and many other Bodies, as well natural as artificial[m]. And ſuch a *Table* we judge to be of infinite Uſe; as well to procure the Light of Information, as to ſerve for a Rule in *Practice*; and again to diſcover many Particulars, that would have been abſolutely unexpected[n].

A Table of the ſpecific Gravities of Bodies.

Its Uſe.

176. It is no ſmall Advantage of this *Table*, to demonſtrate, that all the Variety found in the numerous tangible Bodies known to us, (which are compact, and neither ſpongy, hollow, nor in great part filled with Air,) exceeds not the proportion of twenty-two to one[o]. So finite a Thing is Nature; at leaſt that Part thereof whoſe Uſe principally regards our ſelves[p].

An Attempt to diſcover the Proportion betwixt tangible and untangible Bodies.

177. We alſo thought it worth trying, to diſcover the Proportions of untangible, or pneumatic Bodies, with reſpect to ſuch as are tangible: for which purpoſe, we took an Ounce Vial; chuſing it ſmall, that the following Evaporation might be performed with the leſs Heat. This Vial we fill'd almoſt to the Neck, with ſuch Spirit of Wine as we obſerved by the *Table*, mention'd above, to be ſpecifically lighter, or to contain leſs Matter under the ſame Dimenſion, than all other tangible Bodies that are cloſe and compact. Then we exactly mark'd down the Weight of the Spirit, and the Vial together. After this, we took a Bladder, containing about a Quart, and ſqueez'd all the Air out, as near as poſſible; till the Sides of the Bladder collapſed, and became contiguous; having firſt gently oil'd it, to render it the cloſer or tighter, by filling up the Pores, if there were any. This Bladder we ſtrongly tied with a Wax Thread about the Neck of the Vial; putting the Mouth of the Vial into the Neck of the Bladder: then ſetting the Vial upon a Chafing-Diſh of warm Embers, the Vapour of the Spirit, dilated by the Heat, and thus render'd pneumatical, gradually diſtended or ſwell'd out the Bladder every way, like a Sail. Then we immediately remov'd the Glaſs from the Fire; and placed it upon a Carpet, to prevent its breaking by the Cold: and now we directly made a Hole in the upper Part of the Bladder, leſt the Vapour, as the Heat diminiſh'd, ſhould fall back, or condenſe into Liquor, and diſturb the Calculation. Then taking

[l] See above, §. 165.
[m] See *Vol.* III. *p.* 512, *&c.*
[n] See *Vol.* III. *p.* 519, *&c.*
[o] Suppoſe the Difference in ſpecific Gravity between Gold and Spirit of Wine. See above, §. 174. See alſo *Vol.* III. *p.* 512, 513, 517.
[p] *Viz.* The tangible Part.

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taking away the Bladder, we weigh'd the remaining Spirit of Wine; and thence computed how much was waſted in Vapour: and, by compariſon, calculating how much Space the Body poſſeſs'd in the Form of Spirit of Wine in the Vial; and again, how much it poſſeſs'd when render'd pneumatical in the Bladder; it plainly appeared, that the Body, ſo converted and changed, acquired a Degree of Extenſion a hundred times greater than it had before.

Imperceptible Heat or Cold, brought to the Senſes by the Thermometer.

178. In like manner, let the Nature ſought be *Heat or Cold, ſo weak in Degree as to be imperceptible.* Theſe are brought to the Senſe by means of a Weather-Glaſs; ſuch as we have above deſcribed [q]; wherein Heat expands, and Cold contracts the Air. Neither is this Expanſion and Contraction of the Air perceptible by Sight; but the Air, when expanded, depreſſes Water; and, when contracted, raiſes it up: and thus alone it is that the Thing becomes viſible, and ſenſible; and not otherwiſe.

The Mixtures of Bodies, or the Properties of their different Parts.

179. In like manner, let the Subject of Enquiry be the *Mixture of Bodies*; to determine what they contain that is aqueous, oleaginous, ſpirituous, ſaline, earthy, *&c.* or, in particular, how much Butter is contain'd in Milk; how much Curd; how much Whey, *&c.* All theſe Things are reduced and brought down to the Senſes by artificial and ſkilful Preparations, exhibited in the Form of tangible Bodies [r]. But the Nature of the Spirit in them, tho' not immediately perceived, is diſcover'd by the various Motions, and Endeavours of tangible Bodies, in the Act and Proceſs of their Separation; as alſo by the Acrimony, Corroſiveneſs, different Colours, Smells and Taſtes of the ſame Bodies, after Separation.

The erroneous Procedure of the Chemiſts herein.

180. And, with regard hereto, Men have beſtowed great Pains upon Diſtillations, and artificial Separations; but not with much better Succeſs than in the other Experiments hitherto practiſed: as having proceeded altogether by feeling out their Way in blind Roads; or with more Labour than Underſtanding; and, what is worſe, without imitating, copying, or rivalling Nature: but by their violent Heats, and overpowerful Operations, deſtroying all the Subtilty of Structure, in which the ſecret Virtues and Relations of Things are principally ſeated [s].

Alterations cauſed by the Fire.

181. Nor have Men, as we elſewhere obſerved [t], hitherto taken Notice, with regard to this kind of Separations, that numerous Qualities, in the torturing of Bodies, as well by Fire as otherwiſe, proceed from the Fire itſelf; and the Matters employ'd in the Separation; which Qualities were not before in the Compoſition: whence ſtrange Fallacies have ariſen. Thus all the Vapour which Water emits by Fire, is not the Vapour, or Air, before exiſting in the Body of the Water; but in great meaſure

[q] *Aph.* 13.

[r] As in all thoſe called *Chemical Analyſes*, or *Reſolutions*.

[s] Hence there are few genuine Separations to be found in the common *Chemiſtry*; even as practiſed by the beſt Hands. See the *Sylva Sylvarum*, under the Article *Gald*, &c.

[t] See above, *Part* II. *Aph.* 7. and the *Sylva Sylvarum*, paſſim.

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meaſure produced by the Dilatation of the Water, thro' the Interpoſition of the Heat of the Fire.

Adulterations in Bodies to be ſought.

182. So likewiſe, in general, all exquiſite Trials and Examinations of Bodies, whether natural or artificial, made to diſtinguiſh the genuine from the adulterate, and the better from the worſe, ſhould be referred to this Head; as theſe alſo make what is inſenſible to appear ſenſible: and therefore are, with great Care, to be collected from all Quarters [u].

The Motion of Bodies being either too ſwift, or too ſlow.

183. As to the *fifth* Way of Concealment from the Senſes [w]; 'tis manifeſt that the Action of Senſe is performed in Motion, and Motion in Time; whence, if the Motion of any Body be either ſo ſlow, or ſo ſwift, as not to be proportion'd to the Moments wherein the *Act of Senſation* is performed, the Object will not be perceived; as we find in the Motion of the Hand of a Clock; and the Motion of a Bullet diſcharged from a Gun.

How reduced to the Senſes.

185. But the Motion which is not perceived thro' its Slowneſs, is eaſily and commonly reduced to Senſe, by the Reſult or Amount of the Motion: but that which is imperceptible thro its Velocity, is not hitherto well meaſured; yet the Enquiry of Nature demands that this ſhould be done in ſome Caſes [x].

How Reduction is made, where the Object is too powerful.

186. In the *ſixth* Caſe, where the Senſe is hinder'd by the too great Power of the Object [y], Reduction is made either (1.) by removing the Object farther from the Organ of Senſe; or (2.) taking off from its Force, by the Interpoſition of ſuch a Medium as may weaken, but not annihilate it; or (3.) by admitting and receiving the Reflexion of the Object, where the direct Force of it is too ſtrong; as by receiving the Reflection of the Sun in a Baſon of Water.

Where the Senſe is full charged.

187. The *ſeventh* Caſe of Concealment from the Senſes, (*viz.* that wherein the Senſe is ſo full charged with the Object, as to leave no room for the Admiſſion of a new one,) is almoſt wholly confined to the Senſe of Smelling, and Odours: and does not conſiderably regard the Subject in hand. So that thus much may ſuffice for the Buſineſs of reducing inſenſible Things to ſuch as are ſenſible.

Reduction ſometimes made to the Senſe of other Animals.

188. Sometimes alſo Reduction is made, not to the Senſe of Man, but to the Senſe of other Creatures, whoſe Senſations, in ſome Particulars, exceed thoſe of Men; as the Senſation of a Hound, in ſome Kinds of Smell; and the Senſations of a Cat, an Owl, &c. which ſee Things in the Night by the latent Light of the Air, which is not externally illuminated. For *Teleſius* has juſtly obſerved, that there is a certain original Light in the Air itſelf; tho' ſmall, faint, and generally unſerviceable,

[u] See Mr. *Boyle*'s *Medicina Hydroſtatica*; and the *de Augmentis Scientiarum*, p. 46.

[w] See above, §. 158.

[x] Thus the Motion of Sounds, and even of Light, which ſeems the ſwifteſt Motion of all, is now reduced to Calculation. See the Author's *Hiſtory of Sounds*, in the *Sylva Sylvarum*; and Sir *Iſaac Newton*'s *Optics*, and *Principia*, paſſim.

[y] See above, §. 158.

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unſerviceable, with regard to the Eyes of Men, and many other Creatures; becauſe the Animals to whoſe Senſe this Light is proportioned can ſee by Night; which it is not ſo probable they ſhould do without Light, or by an internal Light of their own [z].

189. It muſt here be obſerved, that we treat only of the Failures or Inſufficiencies of the Senſes, and the Remedies thereof: for the Deceptions of the Senſes ſhould be referred to the particular *Enquiries of Senſe, and Senſibility* [a]; excepting only that grand Fallacy of the Senſes, in making the Meaſure and Rule of Things correſpond to Man; and not to the Univerſe: which is an Error that cannot be corrected, but by Reaſon and univerſal Philoſophy [b].

APHORISM XLI.

190. Among our *Prerogative Inſtances*, we aſſign the *eighteenth* Place to *Journying Inſtances*; which we alſo term *Inſtances of the Road*, and ſometimes *Jointed Inſtances*: that is, ſuch as indicate the Motions of Nature, gradually continued, or connected. But the *Inſtances* of this Kind rather eſcape the Obſervation than the Senſe. And, indeed, the Negligence of Men is here ſurprizing: for they contemplate Nature only by Fits and Starts, or periodically; and then too it is after Bodies are compleat and finiſhed; and not in their Proceſs, or whilſt the Operation is in hand. But if any Man deſired to conſider, and examine, the Contrivances and Induſtry of a certain Artificer, he would not be content to view only the rude Materials of the Workman, and then immediately the finiſh'd Work; but covet to be preſent whilſt the Artiſt proſecutes his Labour, and exerciſes his Skill. And the like Courſe ſhould be taken in the Works of Nature. (18.) *Journying Inſtances.* *Strangely paſſed over.*

191. For Example; if any one would enquire into the *Vegetation of Plants*, he ſhould have an Eye from the firſt ſowing of the Seed, and examine it, almoſt every Day, by taking, or plucking up, a Seed after it had remain'd, for one, two, or three Days, in the Ground; to obſerve, with Diligence, (1.) when, and in what manner, the Seed begins to ſwell, grow plump, and be fill'd, or become turgid, as it were, with Spirit: (2.) Next, how it burſts the Skin, and ſtrikes its Fibres, with ſome Tendency upwards; unleſs the Earth be very ſtubborn: (3.) How it ſhoots its Fibres, in part, to conſtitute Roots downwards; in part, to form Stems upwards; and ſometimes creeping ſideways, if it there find *Exemplified in Vegetation.*

[z] See the Author's *Table of Enquiry for the Hiſtory of Light and Splendor*, Vol. III. p. 322.
[a] See *de Augment. Scientiar.* p. 111, 112, 113; and the *Sylva Sylvarum*, paſſim.
[b] See *Part* I. *Aph.* 42, *&c.*

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the Earth more open, pervious, and yielding: with many Particulars of the ſame Kind [c].

In the Hatching of Eggs, &c.

192. And the like ſhould be done as to Eggs, during their hatching: where the whole Proceſs of Vivification, and Organization, might be eaſily viewed; and what becomes of the Yolk, what of the White [d], *&c.* Underſtand the ſame of Creatures bred from Putrefaction: for as to perfect, terreſtrial Animals, 'tis ſomewhat inhumane to enquire into them, by cutting the *Fœtus* out of the *Uterus*; unleſs when Opportunity offers, by Death, Abortions, the Fortune of the Chace, *&c.* A Watch, therefore, is, by all means, to be kept upon Nature; as ſhe is better diſcover'd by Night than by Day [e]: for theſe Contemplations and Enquiries may be called Nocturnal; by reaſon of the Smallneſs, and Durability, or ſlow burning of the Watch-Light, here ſet up.

In the relaxing or opening of inanimate Bodies.

193. The ſame is alſo to be attempted in inanimate Bodies; and this we have endeavour'd after, by obſerving the Ways wherein Liquors open themſelves by Fire: for Water opens one way, Wine another, Vinegar another, Verjuice another; and Milk, Oil, *&c.* with a ſtill greater Difference; as may be eaſily perceived by boiling them over a ſoft Fire, in a Glaſs Veſſel [f]. But theſe Things are here touched lightly; the Place for treating them more exactly and fully, being when we come to enquire into the *latent Proceſs of Things* [g]: for it muſt be all along remember'd, that we do not, at preſent, treat Things themſelves, but barely produce *Examples*.

Aphorism XLII.

(19.) *Supplemental Inſtances, or Inſtances of Subſtitution.*

194. In the *nineteenth* Place come *Supplemental Inſtances*; or *Inſtances of Subſtitution*; which we alſo call *Inſtances of Refuge*; that is, ſuch as afford Information where the Senſes perfectly fail us: ſo that we have recourſe to them when the *proper Inſtances* cannot be had. This *Subſtitution* is procured two Ways; *viz.* either by *Approximation*, or by *Analogy*.

Procurable two Ways.

Viz. (1.) *By Approximation.*

195. For Example; there is no Medium found, that can poſſibly exclude the Operation of the Loadſtone, in moving Iron; not Gold, not Silver, Stone, Glaſs, Wood, Water, Oil, Cloth, Air, Flame, *&c.* yet, by an exact Scrutiny, ſome Medium may perhaps be found to deaden this Virtue, more than any other Medium, comparatively, and in ſome degree.

196. So,

[c] See Dr. *Grew's Anatomy of Plants*, as alſo that of *Malpighi*; and ſeveral Pieces to the ſame Purpoſe in the *Philoſophical Tranſactions*, *French Memoirs*, &c.

[d] See *Harvey*, *Highmore*, *Malpighi*, &c. upon this Subject.

[e] *Viz.* Where ſhe is removed from human Sight; as ſhe is in theſe grand Works, the Formation of Vegetables, Animals, and Minerals.

[f] See this Subject proſecuted in the *Author's Hiſtory of Condenſation and Rarifaction*, p. 535, 536.

[g] See the *Author's Hiſtory of Condenſation and Rarifaction* throughout, *Vol.* III. *p.* 507, *&c.*

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196. Thus ſuppoſe, the Loadſtone would not attract Iron ſo much thro' Gold of a certain Thickneſs, as thro the ſame Space of Air; or not ſo much thro' ignited Silver, as thro' the ſame when cold, *&c.* for we have not made the Trials: but it is ſufficient to propoſe them, by way of Example [h]. *Exemplified in the Loadſtone.*

197. In like manner, there is no Body found here upon the Earth, but what is ſuſceptible of Heat, when applied to the Fire: yet Air receives Heat much ſooner than a Stone. And ſuch is the *Subſtitution* made in the way of *Degree*, or *Approximation*. *And in Heat.*

198. The *Subſtitution* by Analogy, is uſeful; but leſs certain: and therefore to be practiſed with Judgment. This is perform'd when an inſenſible Thing is brought down to the Senſe; not by the ſenſible Operations of the inſenſible Body itſelf; but by conſidering ſome other ſenſible Body of kin thereto. *And (2.) By Analogy.*

199. For Example; if the Subject of Enquiry were the *Mixture of Spirits*, which are inviſible Subſtances: we are here to obſerve, that there ſeems to be a certain Affinity between Bodies, and the Matter that feeds or nouriſhes them. Thus Oil and fat Bodies ſeem to be the Food of Flame; and Water and aqueous Bodies, the Food of Air: for Flames multiply themſelves upon the Exhalations of Oil; and Air upon the Vapour of Water. In this Enquiry, therefore, we may conſider the Mixture of Water and Oil, which is manifeſt to the Senſe; tho' the Mixture of Air and Flame is not perceptible. Now, Oil and Water are very imperfectly mix'd together by Compoſition, or Agitation; but more curiouſly and elaborately in Plants, Blood, and the Parts of Animals: and, therefore, ſomething of the like kind may happen as to the Mixture of Flame and Air in untangible Bodies. For, tho' Flame and Air do not well incorporate by ſimple Motion; yet they ſeem to mix in the Spirits of Plants, and Animals; the rather, becauſe all animal Spirits prey upon both Kinds of Moiſture, *viz.* the aqueous, the unctuous, as its Aliment [i]. *Exemplified in the Mixture of Spirits.*

200. In like manner, if the Subject of Enquiry be not the perfect Mixture of pneumatical, or untangible Bodies, but only their *Compoſition*; viz. *whether they will eaſily mix among themſelves:* or rather, ſuppoſe, for Example, certain Winds, or Exhalations, or other pneumatical Bodies, which mix not with common Air, but only lodge and float therein, under the Form of Globules and Drops; as being rather broke and ground by the Air, than received into and incorporated with it. Now this cannot be perceived by the Senſe, either in common Air, or other pneumatical Bodies, by reaſon of their Subtilty, or Fineneſs; but a certain Image, or Repreſentation, may be had of the Thing, *In the Compoſition of untangible Bodies.*

[h] See below, *Aph.* 43. §. 204.

[i] See the *Axioms* at the Cloſe of the *Hiſtory of Life and Death*, Vol. III. p. 418, *&c.* See alſo Mr. *Boyle*'s Experiments to this purpoſe. *Abridgm.* Vol. II. p. 469.

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with regard to its Poſſibility, in tangible Fluids; ſuch as Quickſilver, Oil, Water [k], and even in Air itſelf, when it is broke and diſſipated; or riſes in ſmall Particles, or Bubbles thro' Water; and again, an Image of it may be had in the groſſer Fumes [l]; and laſtly, in Duſt, rais'd and floating in the Air: in all which Caſes, there is no Incorporation made. And this Repreſentation is not faulty, provided it be firſt carefully examined, whether, among pneumatical Bodies, there may be ſuch an Heterogeneity as is found among Liquors: for in caſe there is, then theſe Repreſentations by Analogy may be commodiouſly ſubſtituted [m].

Supplemental Inſtances, wherein uſeful, when the proper ones may be had.

201. And tho', as we before obſerved, Information is to be derived from theſe *Supplemental Inſtances*, by way of Refuge or Recourſe [n], when *proper Inſtances* are wanting; yet we would have it underſtood, that they are alſo of great Uſe, even when the *proper Inſtances* are procurable; particularly in ſtrengthening the Information, with the Aſſiſtance of thoſe. But the Time for treating of theſe Inſtances more exactly, is when we come, by the Law of Order, to the *Helps of Induction* [o].

Aphorism XLIII.

(20.) Lancing Inſtances. Their Uſe.

202. In the twentieth Place come *Lancing Inſtances*; which we alſo, for a different Reaſon, call by the Name of *Vellicating Inſtances*. We call them *Vellicating Inſtances*, becauſe they twitch the Underſtanding; and *Lancing Inſtances*, becauſe they cut or lance through Nature: whence we alſo call them *Democritical Inſtances* [p]; that is, ſuch as remind the Underſtanding of the admirable and exquiſite Subtilty of Nature; ſo as to excite and awaken it to Attention, Obſervation, and proper Enquiry.

Exemplified in great Variety.

203. For Example; the following are *Lancing* or *Vellicating Inſtances*. (1.) That ſo ſmall a Drop of Ink, in a Pen, ſhould be drawn out into ſo many Letters, or Lines, as we find it; (2.) that Silver gilt upon its external Surface, ſhould be drawn to ſuch a vaſt Length of gilded Wire [q]; (3.) that ſo very ſmall a Worm as that found in the Skin, ſhould have a Spirit, and a peculiar Structure, and Organization of different Parts; (4.) that a little Saffron ſhould tinge a whole Hogſhead of Water [r]; (5.) that a little Civet, or Muſk, ſhould fill a large Chamber with its Odour; (6.) that ſuch a great Cloud of Smoke ſhould be rais'd from a little Incenſe; (7.) that the exact Differences of Sounds ſhould be every Way convey'd

[k] Theſe being heterogeneous Fluids, and not mixing together upon ſhaking.

[l] Which do not incorporate with the Air.

[m] See Mr. *Boyle* upon the different Surfaces of Fluids in contact. *Abridgm.* Vol. I. p. 316—318. and 388—396.

[n] See above, §. 194.

[o] A Part of the *Novum Organum* that is wanting. See above, *Part* II. *Aph.* 21.

[p] Alluding to the *Atoms of* Democritus. See the Author's Eſſay upon the *Corpuſcular Philoſophy*, Vol. III. p. 599.

[q] See Mr. *Boyle* upon *Effluvia*, Abridgm. *Vol.* I. *p.* 405.

[r] See Mr. *Boyle* upon *Effluvia*, &c. *Vol.* I. *p.* 397—438.

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convey'd through the Air; and even through the Holes and Pores of Wood and Water, (tho' much weakened, indeed, in the Paſſage;) and be reflected with great Diſtinctneſs and Velocity; (8.) that Light and Colour ſhould ſo ſuddenly paſs through ſuch a Bulk of ſolid Matter, as Glaſs, or of a Fluid, as Water; yet ſo as at the ſame time to convey a great and exquiſite Variety of Images; even tho' the Light ſuffers Refraction and Reflection; (9.) that the Loadſtone ſhould operate through all Kinds of Bodies, even the moſt Compact and Solid; and what is ſtill more wonderful; (10.) that in all theſe Caſes, the Action of one Thing, does not greatly hinder the Action of another, in a neutral or indifferent Medium, ſuch as the Air is. Thus numberleſs Images of viſible Objects are carried through the Air; numberleſs Percuſſions of articulate Voices; numberleſs ſpecific Odours; as thoſe of Violets, Roſes, *&c.* even Cold, Heat, and magnetical Virtues; all paſs through the Air, at once, without obſtructing one another; as if each of them had its own ſeparate Way or Paſſage, ſo as to prevent impinging againſt, meeting with, or obſtructing one another.

204. To theſe *Lancing Inſtances*, may be advantageouſly ſubjoined thoſe we term the *Limiting Inſtances*, with regard to this Lancing; as for Example, in the Caſes juſt mentioned, that (1.) one Action does not diſturb or hinder another of a different Kind; tho' two of the ſame Kind damp or extinguiſh each other; that, (2.) the Light of the Sun extinguiſhes or overpowers the Light of the Glow-worm; that, (3.) the Report of a Cannon drowns the Voice; that, (4.) a ſtronger Odour overpowers one that is more delicate; that, (5.) a ſtronger Heat prevails over one that is more gentle; and, (6.) that an Iron-Plate put between the Loadſtone and a Needle, hinders the magnetic Virtue. But the proper Place of treating theſe *Inſtances* alſo, is under the *Helps of Induction*[s].

205. And ſo much for the *Inſtances of Help to the Senſes*; which are of capital Uſe in the *Buſineſs of Information*: for Information begins with the Senſe[t]. But the whole Affair terminates in Practice, and Works: which are the End; as Information is the Beginning[u]. And, therefore, the *Inſtances of principal Uſe in Practice*, are next to follow. *Introduction to Practice.*

APHORISM XLIV.

206. The *Inſtances of principal Uſe in Practice* are of two Kinds, and ſeven in Number; all which we call by the general Name of *Practical Inſtances*. Now Practice has two Inconveniences, or Defects; and ſo many *general Kinds of Prerogative Inſtances*[w]. For Practice either fails, or over-burdens. Practice fails principally from a wrong Determination, *Practical Inſtances, what.*

[s] A Part not entered upon by the Author. See above, *Aph.* 21. and 43.

[t] See above, *Aph.* 38.

[u] See *Part* II. *Aph.* 1.

[w] *Viz.* Two, correſponding to the two Kinds of Defects of Practice: four Defects of the firſt Kind are enumerated in this Paragraph; and three of the ſecond, in the next.

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tion, and Meaſure of the Powers and Actions of Bodies; eſpecially after a diligent Enquiry into the Subject. But the Powers and Actions of Bodies are circumſcribed and meaſured; either, (1.) *by Space of Place* [x]; (2.) *by Moments of Time* [y]; (3.) *by the Correſpondence or Proportion of Quantity* [z]; or, (4.) *by the Predominancy of Virtue* [a]: and unleſs theſe four Things are well and diligently weigh'd, the *Sciences* indeed, may, perhaps, be beautiful in Show and Appearance; but they will remain unfruitful, or barren of Works. And the *four Inſtances*, with regard to theſe *four Particulars*, we call, in general, *Mathematical Inſtances*; or *Inſtances of Menſuration* [b].

Mathematical Inſtances.

Practice, how rendered burdenſome.

207. Practice proves burdenſome either, (1.) from the admixture of uſeleſs Things [c]; (2.) from a Multiplicity of Inſtruments [d]; or, (3.) from the Bulk of the Matter, and Bodies required, in certain Works [e]. Thoſe *Inſtances*, therefore, ought to be highly eſteemed, which either, (1.) direct and determine Practice to ſuch Things as chiefly regard the Benefit and Advantage of Mankind; or, (2.) retrench the Number of Inſtruments required; or, (3.) ſave and leſſen the Materials to be employ'd.

Propitious Inſtances.

208. And the three *Inſtances* correſponding to theſe three Particulars, or Requiſites, we call by the ſingle Name of *Propitious* or *Benevolent Inſtances* [f]. We ſhall ſpeak of theſe ſeven *Inſtances*, ſeparately; and with them conclude this Section of the *Doctrine of Prerogative Inſtances.*

Aphorism XLV.

(21.) *Inſtances of the Staff.*

209. In the *twenty-firſt* Place, therefore, among *Prerogative Inſtances*, come *Inſtances of the Staff*, or *Meaſuring-Rod*; which we alſo call *Permeating*, or *Teminating Inſtances*; for the Forces and Motions of Things operate and exert themſelves in certain Spaces, that are not indefinite or fortuitous, but determinate and finite: and the due Obſervance and marking of theſe Spaces in every Nature ſought, is of great Importance to Practice; not only in preventing us from being deceived by it; but alſo in enlarging and rendering it more extenſive and powerful: For it is ſometimes poſſible to extend Virtues and Powers; and, as it were, bring Diſtances nearer, as we ſee in *Teleſcopes.*

Virtues have their Sphere of Activity.

Some operate at a Diſtance.

Some operate only in Contact.

210. There are alſo many Virtues that operate and extend their Force only by manifeſt Contact; as in the Percuſſion of Bodies; where one Body does not move another, unleſs the impelling Body touches the Body impelled. So, likewiſe, external Remedies, as Unguents and Plaiſters,

[x] See below, *Aph.* 45.
[y] See below, *Aph.* 46.
[z] See below, *Aph.* 47.
[a] See below, *Aph.* 48.
[b] Which ſee below, *Aph.* 45—48.
[c] See below, *Aph.* 49.
[d] See below, *Aph.* 50.
[e] See below, *Aph.* 51.
[f] See *Aph.* 49---51.

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ſters, exert not their Virtues, without touching the Body. And, laſtly, the Objects of the Taſte, and Touch, do not ſtrike, or affect, if not contiguous to the reſpective Organs.

Others operate at a ſhort Diſtances.

211. There are alſo other Virtues, which operate at a ſmall Diſtance; very few whereof have been hitherto obſerved; whilſt there are more of them than Men ſuſpect. Thus, to give obvious Examples; Amber, and Jet, attract Straws, and other light Bodies. Bubbles of Water approaching each other, run together. Some purgative Medicines draw the Humours downwards, and the like. But that magnetic Virtue whereby Iron and the Loadſtone, or Loadſtones themſelves, meet each other, operates only in a certain little Sphere of Activity; but if there be any magnetic Virtue flowing from the inner Parts of the Earth, to the Needle, in reſpect of its Verticity, the Operation is performed at a great Diſtance.

Some at very great ones.

212. Again; if there be any magnetic Virtue, which operates by Conſent, between the Globe of the Earth, and ponderous Bodies; or between the Globe of the Moon and the Waters of the Sea; which ſeems highly probable from the Spring-Tides [g]; or between the Sphere of the Fixed Stars and the Planets, ſo as to attract the Planets to their Apogees; all theſe muſt operate at very great Diſtances.

Inſtanced in Flame, Heat, and Cold.

213. There are alſo found certain Communications of Flame, to conſiderable Diſtances, in certain Materials: as they relate, in particular, of the *Naphtha* of *Babylon*. Heat, likewiſe, inſinuates itſelf to great Diſtances; and ſo does Cold: inſomuch, that the huge Maſſes of Ice broke off, and floating in the North Sea, and thence coming into the Atlantic Ocean, ſtrike a Coldneſs many Leagues off, perceptible to the Inhabitants about *Canada* [h].

In Odours, Sounds, and Light.

214. Odours, likewiſe, tho' theſe ſeem always attended with a corporeal Emiſſion of the odoriferous Subſtance, operate at conſiderable Diſtances; as appears to ſuch as ſail along the Coaſts of *Florida*, or ſome Parts of *Spain*, where there are whole Groves, or Woods of Lemmons, Oranges, and the like odoriferous Trees; or Thickets of Roſemary, Marjoram, *&c.* [i] And laſtly, Sounds, but particularly the Rays of Light, operate to prodigious Diſtances [k].

All Virtues limited.

215. But all theſe Virtues, whether they operate to ſmall, or large Diſtances, certainly operate to finite ones, and ſuch as are known to Nature: ſo that there are certain fixed Bounds, which they cannot exceed; and that in Proportion, either (1.) to the Bulk and Quantity of the Bodies; or, (2.) to the Strength or Weakneſs of the Virtues; or, (3.) to the Suitableneſs or Unſuitableneſs of the Medium: all which, ought

[g] See *Vol.* III. *p.* 614, &c.
[h] See Mr. *Boyle's Hiſtory of Cold*, paſſim.
[i] See Mr. *Boyle of Effluvia.*
[k] See Mr. *Boyle*, Dr. *Hook*, Sir *Iſaac Newton*, the *Philoſophical Tranſactions*, *French Memoirs*, &c.

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ought to be carefully obſerved, and brought to Computation[l]. And again; the Meaſures of thoſe called *Violent Motions*, or the Motions of Projectiles, as Bullets from Guns, the Motions of Carriages, *&c.* ought to be obſerved and determined: for theſe alſo have manifeſtly their fixed Limits.

Some act at a Diſtance, and not by Contact.

216. There are, likewiſe, certain Motions and Virtues, contrary to thoſe that operate by Contact, and not at a Diſtance; as acting at a Diſtance, and not by Contact: and again; others that operate weaker at a ſmall Diſtance, and ſtronger at a greater. Thus Viſion is not well performed in Contact; but requires a certain Medium, and a certain Diſtance, to be perfect: tho' I have been aſſured, by a Perſon of Veracity, who was couched for Cataracts in his Eyes, (which is an Operation performed by means of a ſmall ſilver Needle, thruſt between the firſt Coat of the Eye, to remove and force away the Film of the Cataract into the Corner of the Eye,) that he clearly ſaw the Needle moving over the Pupilla, or Sight of the Eye[m].

Exemplified in Viſion.

217. But allowing this, 'tis manifeſt, that larger Objects cannot be well or diſtinctly ſeen, except in the Vertex of a Cone, made by the converging of the Rays from ſome Diſtance. Thus old Men ſee better when the Object is removed a little farther off, than when it is near. And it is certain, that in Projectiles, the Percuſſion is not ſo ſtrong at too ſmall a Diſtance, as it is ſoon after, or at the due Diſtance. The Meaſures, therefore, of theſe Things, and others of the like Kind, are to be ſet down, to determine their Motion in Point of *Diſtance*.

The Motions of Expanſion to be meaſured.

218. We muſt not omit another Kind of Local Meaſure of Motions, which regards not progreſſive, but *ſpherical Motion*; that is, the Expanſion of Bodies into a larger Sphere, or their Contraction into a leſs. For we ſhould enquire, among the Meaſures of Motion, what Degree of Compreſſion or Extenſion, Bodies, according to their Nature, may eaſily and readily ſuffer; and at what Point they begin to reſiſt; and at length, will ſuſtain no more. Thus when a blown Bladder is compreſs'd, the Air ſuſtains ſome Degree of Compreſſure; but if the Compreſſure be too great, the Air enduring it no longer, burſts the Bladder, and frees itſelf.

Exemplified in a blown Bladder.

In Air under Water.

219. But to make a more exact Experiment to this Purpoſe, we took a ſmall, light, and thin metalline Bell; and plunged it into a Baſon of Water, ſo that it carried down along with it the Air contained in its Cavity, to the bottom of the Veſſel; where we had firſt placed a little Ball, which the Cavity of the Bell was to fall upon. When this Ball was little in Proportion to the Cavity of the Bell, the Air ſhrunk itſelf into a leſs Compaſs, without eſcaping; but if the Ball was ſo large, that the Air could not freely yield, the Air would then, as being impatient of

[l] Here we may obſerve the proper Uſe of Calculation, or Mathematics, in Phyſics.

[m] See Sir *Iſaac Newton*'s *Optics*; particularly the Queries at the End thereof.

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of a greater Preſſure, raiſe up the Bell, on one ſide, and aſcend in Bubbles[n].

220. Again; to try what Degree of Extenſion Air is capable of, we took a Glaſs-Egg, with a ſmall Orifice at one End thereof; and by ſtrong Suction drew out the Air; then immediately ſtopping the Orifice with the Finger, we plunged the Glaſs in Water; where the Finger being removed, the Air that was ſtretched and dilated by the Suction, now endeavouring to contract itſelf; (ſo that if the Glaſs had not been plunged in Water, it would have drawn in the external Air with a hiſſing Noiſe;) it drew in ſuch a Quantity of Water, as ſufficed to recover the remaining Air to its former Bulk or Dimenſion[o]. *The Rarifaction of the Air.*

221. And it is certain, that pneumatical, or rare Bodies, ſuch as the Air, will ſuffer a remarkable Contraction; but that tangible Bodies, ſuch as Water, ſuffer Compreſſion with much greater Difficulty, and in a leſs Degree. What this Degree might be, we attempted to diſcover by the following Experiment. *Tangible Bodies hard to compreſs.*

222. We cauſed a hollow and ſtrong Globe of Lead to be formed, capable of containing two Wine Pints; and having made a Hole therein, we fill'd the Globe with Water; then ſolder'd up the Orifice with Lead; and now beat the Sides of the Globe flat out with a large Hammer: whence the Water was of neceſſity contracted; becauſe a Sphere is the Figure of largeſt Capacity. And when hammering was of no farther Service, in making the Water ſhrink; we put the Lead Veſſel into a Preſs, and ſqueezed it; till at length the Water forced itſelf thro' the ſolid Lead; and ſtood upon its Surface, like a Dew. We afterwards computed into how much leſs Space the Water was driven, by this violent Preſſure[p]. *Water compreſs'd.*

223. But ſolid, dry, or more compact Bodies, as Stones, Wood, and Metals, ſuſtain a much leſs, and almoſt imperceptible Compreſſion, and Extenſion; and either releaſe themſelves by breaking, moving, ſqueezing out, or other Evaſions; as appears in the bending of Wood, or Metal; in Spring-Clocks, or Watches; in Projectiles, Hammering, and numerous other Motions. *Solids harder to compreſs.*

224. But all theſe Particulars, together with their Meaſures, are to be diſcover'd and ſet down, in the *Enquiry into Nature*, either in the Way of certain Calculation, Eſtimation, or Compariſon; as the Caſe will admit. *Calculations, or Eſtimations, to be made of every kind.*

[n] The Deſign was here, to eſtimate the Force wherewith Air reſiſts its own Condenſation, or endeavour to eſcape. See Mr. *Boyle*'s *Pneumatical Experiments*; particularly *Abridgm.* Vol. II. p. 670---672.

[o] See Mr. *Boyle*'s Works, *Abridgm.* Vol. II. p. 414.

[p] See the Experiments of the *Academie del Cimento*; and Mr. *Boyle*'s Works, *Abridgm.* Vol. I. p. 628, 629. Vol. II. p. 290, 666, 703, *&c.*

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Aphorism XLVI.

(22) *Inſtances of the Courſe.* 225. In the *twenty-ſecond* Place, among our *Prerogative Inſtances*, come *Inſtances of the Courſe*, or *Stage*; which we alſo ſometimes call *Hydrometrical Inſtances*[q]; deriving the Term from the Hour-Glaſſes of the Ancients, wherein they uſed Water inſtead of Sand. *Their Office.* Theſe Inſtances meaſure Nature by Moments of Time[r], as the *Inſtances of the Staff*[s] meaſure them by Degrees of Space. For all Motions, or natural Actions, are perform'd in Time; one indeed ſwifter, and another ſlower; but all in certain Moments well known to Nature. *Actions perform'd in different Times.* Even thoſe Actions which ſeem ſuddenly performed, or in the twinkling of an Eye, as we phraſe it, are yet found to differ in Time, as to more or leſs.

Exemplified in many Particulars. 226. And, firſt, we ſee that the Revolutions or Returns of the Celeſtial Bodies are performed in certain Times or Periods; ſo likewiſe is the Flux and Reflux of the Sea. The Deſcent of heavy Bodies towards the Earth, and the Aſcent of light Bodies towards the Heavens, is perform'd in certain Moments; according to the Nature of the Body, and the Medium it moves in. The Motions of a Ship, in ſailing; of a Horſe, or other Creature, in running; of a Projectile, in flying, *&c.* are all, in like manner, performed in certain Times, meaſurable in the Amount or Reſult. And, with regard to Heat, we ſee that Boys, in the Winter, will waſh their Hands in the Flame of a common Fire, without burning themſelves; and, in the way of Sport, others will, by a nimble and equable Motion, turn Glaſſes of Wine, or Water, upſide-down, and recover them again, without ſpilling: and there are many Particulars of the ſame Kind.

In Sound. 227. So, likewiſe, ſome Compreſſions, Dilatations, and Eruptions, or Exploſions of Bodies, happen ſwifter, and others ſlower, according to the Nature of the Body, and the Motion; but they happen in certain Moments of Time. Thus, in the joint Exploſion of ſeveral large Cannons, which may be heard ſometimes to the Diſtance of thirty Miles, the Report is firſt audible to thoſe near the Place, where the Diſcharge is made; and afterwards to thoſe who are farther off[t].

And Viſion. 228. And in Viſion, where the Action is exceeding ſwift, 'tis plain, that certain Moments of Time are required to its Performance: as is plain from hence, that Bodies are rendered inviſible through too great a Velocity of Motion; as in the Diſcharge of a Bullet from a Gun; where the Ball flies too ſwift to have its Impreſſion received by the Eye.

229. And,

[q] As if it were Inſtances of the *Time-Keeper*, or *Hour-Glaſs*.
[r] See above, *Aph.* 44.
[s] See above, *Aph.* 45.
[t] See Mr. *Whiſton*'s Second Edition of his Eſſay upon the *Longitude*; and Dr. *Derham*'s Paper upon the *Motion of Sounds*, in the *Philoſophical Tranſactions*, N° 313.

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229. And, upon comparing this with the like Caſes, we have ſometimes entertain'd a ſtrange Suſpicion; *viz.* whether the Stars of a clear Sky be ſeen by us at the preciſe Time they really exiſt, or rather ſomewhat later; and, whether there be not, with regard to the Sight of the Heavens, a true and apparent Time, as well as a true Place, and apparent Place; which is obſerved by Aſtronomers in the Parallaxes. For it ſeems incredible, that the Rays of the celeſtial Bodies ſhould inſtantly travel ſuch an immenſe Diſtance to the Sight; and not rather take up ſome conſiderable Time in the Journey. [u]. *The Motion of Light, from the fixed Stars,*

230. But this Suſpicion, as to any great Interval betwixt the real and apparent Time, afterwards vaniſh'd; upon conſidering that infinite Loſs and Diminution of Quantity, as to Sight, between the real Body of a Star, and the apparent Object; which Difference is cauſed by the Diſtance; and, at the ſame time, conſidering to what a Diſtance Objects that are barely white may, of a ſudden, be ſeen here below; amounting to ſixty Miles at the leaſt [w]: for there is no queſtion, but that the Light of the celeſtial Bodies has not only the vivid Strength of Whiteneſs; but alſo vaſtly exceeds the Light of Flame, as we find Flame here, in Power and Strength of Radiancy. Nay, that immenſe Velocity wherewith groſs Matter moves, in the diurnal Rotation, renders this wonderfully ſwift Motion of the Rays of Light, from the Fixed Stars, more probable. But what has the greateſt Weight with me, is this; that if there ſhould here be any conſiderable Space of Time between Reality and Sight; or the Exiſtence of the Object, and its being ſeen; it muſt then happen, that the Sight would be frequently intercepted and confounded by Clouds, ariſing in the mean time; or by the like Diſturbances in the Medium. And thus much for the *ſimple Menſuration of Time.* *Is extremely ſwift.*

231. The Meaſure of Motions and Actions is not, however, to be ſought only ſimply; but much rather comparatively: this being a Thing of excellent Uſe; and having regard to very many Particulars. We find, that the Flaſh of a great Gun is ſeen before the Sound is heard; altho' it is certain that the Bullet muſt ſtrike the Air, before the Flame, which was behind it, could get out; and that this muſt happen from a greater Velocity in the Motion of Light, than in the Motion of Sound. We find alſo, that viſible Objects are ſooner received than let go by the Sight; whence it is that the Strings of a muſical Inſtrument ſtruck with the Finger, appear double, or treble, in the Vibration; *viz.* becauſe a new Object is received before the other is diſcharged: and, for the ſame Reaſon, Rings twirling upon an Axis ſeem Spheres; and a lighted Flambeau, carried haſtily by Night, appears tail'd, like a Comet. *The Meaſures of Motions and Actions, to be found comparatively.* *Motions that differ comparatively.*

[u] See this Time computed by *M. Huygens de la Lumiere*, p. 8 and 9. See alſo Sir *Iſaac Newton* upon the Subject; and compare them both with the Papers of *M. Maraldi* in the *French Memoirs*, Ann. 1707

[w] See, again, Mr. *Whiſton*'s Eſſay upon the *Longitude.*

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Whence Galilæo *accounted for the Tides.*

232. And, from this Foundation of the Inequality of Motion in point of Velocity, *Galilæo* imagin'd the Cauſe of the Flux and Reflux of the Sea to be from the Earth's revolving with a greater Velocity than the Waters: whence the Waters gathering into a Heap upwards, afterwards ſunk down by degrees; as we ſee in a Veſſel of Water briſkly revolved. But this Solution he invented barely upon Suppoſition, and not upon Proof, of the Earth's Motion; and alſo without being well informed of the ſexhorary Motion [x] of the Sea.

The Uſe of the comparative Meaſure of Motions, exemplified in Powder-Mines.

233. But we have an eminent Example of the comparative Meaſure of Motion, and at the ſame time of its remarkable Uſe, in the Buſineſs of Powder-Mines; wherein vaſt Maſſes of Earth, Piles of Buildings, *&c.* are overturn'd, and toſs'd into the Air with a ſmall Quantity of Gunpowder. The Cauſe whereof is, doubtleſs, this; that the Motion of Dilatation in the Powder, which is the impelling Force, is many Degrees ſwifter than the Motion of Gravity, which makes the Reſiſtance; ſo that the prevailing Motion is perform'd, before the oppoſite Motion begins: whilſt, at firſt, there was a kind of Neutrality, or want of Reſiſtance. And hence, in all Projectiles, it is not ſo much the ſtrong, as the ſharp and quick Stroke, or Percuſſion, that carries the Body fartheſt. Nor was it poſſible that a ſmall Quantity of Spirit in Animals, eſpecially in thoſe ſo bulky as the Elephant, or the Whale, ſhould move, and manage ſo great a Maſs of Matter; but for the Velocity of the Motion of the Spirit; and the Inability of the corporeal Maſs to reſiſt.

This the Foundation of Magical Inſtances.

234. And this is one of the principal Foundations of the *Magical Inſtances*, which we ſhall ſoon conſider [y]; wherein a ſmall Quantity of Matter overpowers and ſubdues a much greater: that is, where there may be a Pre-occupation, or Anticipation of Motions, by the Velocity of one, before another is ready [z].

The Caſe to be regarded in all natural Actions.

235. Laſtly, this Buſineſs of Anticipation and Subſequence, ſhould be obſerved in all natural Actions. Thus in the Infuſion of Rhubarb, the purgative Virtue is drawn out firſt; and the aſtringent Virtue afterwards [a]. And ſomething of the like kind we have found upon infuſing Violets in Vinegar [b]; where the ſweet and delicate Odour of the Flowers is firſt received; and afterwards the more earthy Part; which confounds the Odour: therefore, if Violets be infuſed for a whole Day, their Smell is obtain'd much fainter, than if they were infuſed only for a Quarter of an Hour, and then taken out. And becauſe Violets contain but little odoriferous Spirit, if freſh ones be infuſed in the ſame Liquor, every Quarter of an Hour, for ſix Times; the Tincture, or Infuſion, will become ſo rich in the Space of an Hour and an half, as to continue, for

2 a whole

[x] See *Vol.* III. *p.* 624.

[y] See below, *Aph.* 51.

[z] This deſerves to be carefully conſider'd and remember'd; for many extraordinary Operations, and Caſes of Practice, depend upon it.

[a] See the *Sylva Sylvarum* under the Article *Infuſion.*

[b] See the Place laſt cited.

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a whole Year, of an exceeding grateful Odour, not inferior to the Flowers themſelves. But it muſt be obſerved, that the Odour does not come to collect its full Strength, till a Month after the Infuſion is made. And the Buſineſs of Diſtillation affords numerous remarkable Examples to the ſame Purpoſe.

APHORISM XLVII.

236. In the *twenty-third* Place, among *Prerogative Inſtances*, come *Inſtances of Quantity*; which we alſo call the *Doſes of Nature*[c]: borrowing the Expreſſion from Medicine. Theſe are ſuch *Inſtances* as meaſure Virtues by the Quantities of Bodies; and indicate what the Quantity of a Body contributes to the Quantity of Virtue. (23.) *Inſtances of Quantity, or* Doſes *of* Nature.

337. And, firſt, there are certain Virtues ſubſiſting only in a *Coſmical Quantity*; that is, ſuch a Quantity as has a Conſent with the Configuration and Structure of the Univerſe. Thus the whole Body of the Earth, unmoved ſuppoſe in its Whole, does not fall downwards, tho' its Parts do: the Waters ebb and flow in the Sea, but not in Rivers; unleſs where they communicate with the Sea: and almoſt all particular Virtues operate in proportion, as the Body is bigger or leſs. Large Collections of Water do not eaſily corrupt; as ſmall ones do. New Wines and Drinks ripen quicker, or become ſooner potable, when contained in ſmall Veſſels, than when in large ones. If a Plant be added to a large Proportion of Liquor, it makes an Infuſion rather than a Tincture; but if to a leſs, it makes a Tincture rather than an Infuſion. So, with regard to the human Body, bathing is one Thing, but ſprinkling another. And thus the fineſt Dews never fall in the Air, but are diſſipated and incorporated with it. And we ſee in breathing upon poliſh'd Gems, that the ſmall Quantity of Moiſture thus left upon their Surface, is preſently licked up by the Air; as a light Cloud, or Miſt, is diſſipated by the Wind. Again, a Piece of a Loadſtone will not attract ſo much Iron as the whole Loadſtone would do. *Exemplified in various Particulars.*

238. There are alſo Virtues, wherein Smallneſs of Quantity has the greateſt Effect; as a ſharp Point penetrates eaſier than a blunt one; and as the angular Point of a Diamond cuts Glaſs: with other Examples of the like kind. *Smallneſs of Quantity has ſometimes the greateſt Effect.*

239. But we are not here to dwell upon Indefinites; but ſhould enquire into the Proportions of the Quantity of a Body, with regard to the Meaſure of its Virtue: for one might eaſily imagine, that the Proportions of Quantity correſponded to the Proportions of Virtue; as that a leaden Bullet of two Ounces ſhould fall twice as ſwift as another of one Ounce; which is abſolutely falſe. Nor do the ſame, but very different, Proportions, obtain in all kinds of Virtues: and, therefore, theſe Meaſures *The Meaſures of the Virtues in each Body, to be particularly ſought.*

[c] See above, *Aph.* 44.

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ſures muſt be derived from Experiments, and Things themſelves; and not from Probabilities, or Conjectures.

The Doſes of Nature to be ſubjoin'd in every Enquiry.

240. Laſtly; in every natural *Enquiry*, the Quantity of the Body required to produce any Effect muſt be ſet down; as the *Doſe:* and the Cautions, with regard to Quantity, either in Exceſs or Defect, continually interſpers'd.

Aphorism XLVIII.

(24.) *Inſtances of Reluctance.*

241. In the *twenty-fourth* Place come *Inſtances of Reluctance*; which we alſo call by the Name of *Prevailing Inſtances*; that is, ſuch as ſhew the Predominancy, or Subjection of Virtues to one anothe; or which of them is the ſtronger, and prevails; and which the weaker, and ſubmits: for the Motions and Struggles of Bodies are no leſs compounded, recompounded, and complicate, than Bodies themſelves. We will, therefore, firſt lay down the principal Species of *Motions*, or *active Virtues*; that their Compariſon, in Point of Strength, may be the clearer; and thence the *Inſtances of Reluctance* and *Prevalence*, be the better known and deſigned.

Belong to all the Species of Motion.

Motions divided and diſtinguiſhed into (1.) the Motion of Reſiſtance.

242. The *firſt Motion* may be the Motion of *Reſiſtance in Matter*, or the Motion that reſides in all the Parts thereof, and will not ſuffer it to be any way annihilated; ſo that no Force of Fire, no Weight, or Depreſſion, no Violence, no length of Time, or Continuance of Duration, can ever poſſibly reduce any the leaſt Particle of Matter to nothing; but it it will ſtill continue ſomething; poſſeſs a certain Space; and to whatever Neceſſity it be reduced, free itſelf, either by changing its Form or Place; or, if it cannot do that, it will continue as it was; ſo that the Time ſhall never come, when it is nothing, or has no Exiſtence. And of this Motion we need produce no Examples, becauſe it is univerſal, or exiſts in all Bodies [d].

(2.) *The Motion of Connection.*

243. Let the *ſecond Motion* be that we term *Motion of Connection*; whereby Bodies ſuffer not themſelves to be divided, or ſeparated from others, on account of the mutual Contact and Connection they affect: which is a Motion call'd by the Schools, the Motion preventive of Vacuity; as when Water is forced upwards by Suction, or by the Pump; or when the Fleſh is raiſed by Cupping-Glaſſes; or, as when Water rums thro' a Siphon; with numerous other Examples of the ſame kind [e].

(3.) *The Motion of Liberty.*

244. Let the *third Motion* be what we call *Motion of Liberty*, or *Freeing Motion*; whereby Bodies endeavour to eaſe and free themſelves from any preternatural Preſſure or Tenſion; or reſtore themſelves to the Dimenſions agreeable to their own Natures. And of this Motion alſo the Examples are numerous. Thus Water endeavours to free itſelf from Preſ-

[d] See the *Author's Hiſtory of Condenſation and Rarifaction*, Vol. III.

[e] Let it be conſidered whether all theſe Motions are juſtly explained by the Weight, Spring, or Preſſure of the Air.

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ſure in the Action of Sailing, and Rowing; the Air, in the Action of Flying, and in the Undulations of the Winds; the Springs in Watches; compreſs'd Air in Pot-Guns, which forces out the Pellet, *&c.*

245. And, for this Motion of Liberty in the Caſe of *Tenſion*, we ſee, the Air frees itſelf therefrom, when it remains after Suction in Glaſs-Eggs [f]; we ſee it alſo in Strings, Leather, Cloth, *&c.* which reſtore themſelves after *Tenſion*; unleſs where they remained ſo long ſtretch'd, as to have their Motion of Liberty ſubdued. This Motion is unſcientifically called, by the Schools, the Motion of the *Elementary Forms*: for it does not only belong to Air, Water, and Flame; but to all the Diverſities of conſiſtent Bodies; as Wood, Iron, Lead, Cloth, Skins, *&c.* each Body having its own Meaſure of Extent or Dimenſion, from whence it is with difficulty ſtretched to any conſiderable Diſtance [g]. *Its Phænomena in Tenſion.*

246. But as this *Motion of Liberty* is, of all others, the moſt obvious; and alſo extremely general; it requires to be well and clearly diſtinguiſhed: for ſome very inadvertently confound it with the *Motion of Reſiſtance*, and the *Motion of Connection*. Thus when, by this Motion, Matter frees itſelf from Preſſure, they confound it with the *Motion of Reſiſtance*; and when Matter frees itſelf from Tenſion, they confound it with the *Motion of Connection*; as if compreſſed Bodies yielded or dilated themſelves only to prevent a Penetration of Dimenſions; and as if, when ſtretched, they reſtored, or contracted themſelves, to prevent a *Vacuum*: whereas, if compreſs'd Air were to become as denſe as Water; or Wood as denſe as Stone; there would be no danger of a Penetration of Dimenſions; even tho' theſe Bodies could be much farther compreſſed than they any way admit of. So likewiſe, if Water were to be dilated to the ſame Degree of Rarifaction with Air; or Stone to the ſame Degree of Rarifaction with Wood; there is no Neceſſity that a *Vacuum* ſhould enſue; even tho' theſe Bodies could be extended much farther than their Natures any way allow [h]. And therefore, the Caſe is not brought to a Penetration of Dimenſions, and Vacuity, except in the utmoſt Limits of Condenſation and Rarifaction: whereas theſe Motions ſtop far ſhort of thoſe Limits; as being no more than Appetites which Bodies have of continuing themſelves in their own Conſiſtencies, or Dimenſions; and not ſuddenly departing from them, unleſs altered by gentle Means, and by Conſent. *This Motion to be well diſtinguiſhed.*

247. But it is much more neceſſary, as being a Thing of great Conſequence, to obſerve that violent Motion, as 'tis called, is no other than this very *Motion of Liberty*, tending from Compreſſion to Relaxation. For in all ſimple Protruſion, or Flight through the Air, there is no Tendency to Motion, or Change of Place, before the Parts of the Body ſuffer preter- *Violent Motion, the Motion of Liberty.*

[f] See above, *Aph.* 45. §. 220.

[g] See the *Hiſtory of Condenſation and Rarifaction*, paſſim; and the Article *Motion*, in the *Sylva Sylvarum*.

[h] See the Author's *Hiſtory of Condenſation and Rarifaction*, Vol. III.

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preternaturally, and are compreſſed by the impelling Force; whence it is that ſome Parts ſucceſſively preſſing againſt the reſt, the whole Body is driven off, or protruded; and not only in a progreſſive, but at the ſame time, in a rotatory or revolating Motion; ſo as that by this Means alſo, the Parts may free themſelves, or ſuffer more equally [i].

(4.) *The Motion of Extention.*

248. Let the *fourth* Motion be the *Motion of Extenſion*; which is, in ſome meaſure, the Oppoſite to the *Motion of Liberty*: for in the Motion of Liberty, Bodies avoid, dread, and fly from a new Dimenſion, or a new Degree of Dilatation, or Contraction; and endeavour, with all their Force, to recover their former State: whereas, on the contrary, in the *Motion of Extenſion*, Bodies affect a new Dimenſion; and ſometimes willingly and haſtily aſpire to it, even with a violent Endeavour; as we ſee in Gunpowder. And the moſt powerful, or at leaſt the moſt common, tho' not the only Inſtruments of this Motion, are *Heat* and *Cold*.

Exemplified in Air.

249. For Example, if Air be dilated by *Tenſion*, as it is in Suction, it has a great Appetite of reſtoring itſelf; but if Heat be applied thereto, it, on the contrary, tends to dilate, and occupy a new Dimenſion; and goes willingly over thereto, as into a new State: and after ſome Continuance of this Dilatation, it has no great Appetite to return, unleſs ſollicited thereto by the Application of Cold; which is no ſpontaneous Return, but a repeated Change.

And Water.

250. So likewiſe Water, when compreſſed, reſiſts, and endeavours, as it were, to enlarge itſelf; but upon the Continuance of intenſe Cold, it ſpontaneouſly and readily concretes into Ice: and if the Cold continues very long, without Interruption from any Warmth; as perhaps ſometimes happens in the deeper Caverns; the Water is turned into Cryſtal; or Matter approaching thereto; and never recovers the Nature of Water again [k].

(5.) *The Motion of Continuity.*

251. Let the *fifth Motion* be the *Motion of Continuity*; by which we do not mean a ſimple and primary Continuation with any other Body; for that is *Motion of Connection*; but of Self-Continuation in a certain Body. For, 'tis manifeſt, that all Bodies reſiſt a Solution of their Continuity; ſome indeed more, and others leſs; but all of them in a Degree. And, as in hard Bodies, ſuch as Steel and Glaſs, the Reſiſtance of Diſcontinuation is very ſtrong; ſo likewiſe in Liquors, where this Motion ſeems either to ceaſe, or at leaſt to languiſh, yet it is not abſolutely wanting: but it plainly reſides in them, as it were, in the loweſt Degree, and diſcovers itſelf by numerous Experiments; as particularly in Bubbles; the Sphericity of Drops; the fine Threads of Iſicles; in the drawing out of glutinous Bodies, *&c.* But this Appetite principally appears, when a Diſcontinuation is attempted in the ſmall Parts of Bodies: Thus, in beating the

[i] See *Vol.* III. *p.* 606.

[k] See the *Sylva Sylvarum*, under the Article *Tranſmutation*. See alſo Mr. *Boyle* upon the *Origin of Gems*.

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the Mortar, after the Pulverization is carried to a certain Degree, the Peſtel operates no further upon the Matter, to reduce it finer. And ſo Water will not enter into fine Cracks, or Fiſſures; nor Air, tho' ſo extremely ſubtile, readily inſinuate into the Pores of ſolid Veſſels.

252. Let the *ſixth Motion* be that we call *Motion of Acquiſition*, or *Motion of Want*; by which, Bodies, when placed among others that are heterogeneous to, and as it were at Enmity with them, if they find an opportunity of flying and avoiding theſe, and applying themſelves to others nearer related, tho' without any cloſe or intimate Conſent, yet they preſently embrace the Occaſion; and chuſe the latter before the former, as it were in the Way of *Acquiſition*; or as if they ſtood in *want* of ſuch Bodies; from whence we derive the Name. (6.) *The Motion of Acquiſition.*

253. For Example, Leaf-Gold, or any other Metal in the Leaf, delights not in the ambient Air; and therefore if it touches any tangible or groſs Body, as the Finger, Paper, *&c.* it preſently ſticks thereto, and is not eaſily ſeparated again. *Exemplified in Leaf-Gold.*

254. So Paper, Cloth, *&c.* have no great Agreement with the Air reſiding or lodged in the Pores thereof; and therefore, ſuch Bodies readily imbibe Water, or other Moiſture, and reject or throw out the Air. So if Sugar, or Sponge, be dipt only at one end in Water, or Wine; whilſt the other Part remains far above the Surface of the Liquor; yet theſe Bodies gradually attract the Wine or Water upwards [l]. *Spongy Bodies attracting Moiſture.*

255. Hence we may derive an excellent Rule for the opening and diſſolving of Bodies: for, (not to meddle at preſent with Corroſive Menſtruums, which force themſelves a Paſſage) if *a ſuitable Body can be found that has a greater Agreement, or Conſent, with any Solid, than the Matter has wherewith ſuch a Solid is mixed, as it were by Neceſſity* [m]; *the Solid will immediately open, and relax itſelf, to receive the latter, and exclude and reject the former* [n]. Nor does this *Motion of Acquiſition* operate only in immediate Contact: For the *electrical Virtue*, (about which Dr. *Gilbert* and others have invented ſuch Fables) is an Appetite excited by a gentle Friction; and not well agreeing with, or enduring the Air; but affects or covets other tangible Bodies, if it find them near at hand [o]. *A Rule for diſſolving Bodies.* *Electricity, what.*

256. Let the *ſeventh Motion* be that we call the *Motion of the greater Congregation*, whereby Bodies are carried to the Maſſes of their own Natures; heavy ones, to the Globe of the Earth; and light ones to the ſurrounding Heavens. This, by the Schools, from a ſuperficial Conſide- (7.) *Motion of the greater Congregation.*

[l] See the *Sylva Sylvarum*, under the Article *Attraction.*

[m] The *Inſtances* hereof are numerous in Chemiſtry, as in adding Oil of Vitriol to Nitre, Sea-Salt, *&c.* when the Oil of Vitriol ſeizes upon the earthy Part, and ſets the Spirit of Nitre, *&c.* free.

[n] See the Article *Attraction*, in the *Sylva Sylvarum*. See alſo the Chapter of *Menſtruums* in *Boerhaave's Chemiſtry*; and M. *Geoffroy's Table* of the different Relations obſerved in Chemiſtry, betwixt different Bodies, in the *French Memoirs*. An. 1718.

[o] See Mr. *Boyle* of *Electricity*. See alſo the Author's *Sylva Sylvarum*, under the Article *Electricity*.

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ration, is called *Natural Motion*; becauſe they found nothing that was externally viſible to give it; and therefore imagined it to reſide naturally, or to be innate in Things themſelves: or again, perhaps, becauſe it is a ceaſeleſs, or continual Motion. And no wonder, ſince the Heavens and the Earth are always at hand; whereas the Cauſes and Origins of many other Motions, are ſometimes preſent, and ſometimes abſent: and hence they laid this down, for a conſtant and proper Motion; and the others for acquired ones.

Is languid. 257. But, in reality, this Motion is weak, and languid; as yielding and ſubmitting to other Motions, ſo long as they continue to operate; unleſs the Bulk of the Body be conſiderable. And altho' this Motion has ſo poſſeſs'd the Thoughts of Men, as almoſt to have ſtifled or ſuperſeded the reſt; yet it is very little that they know thereof; but run into many Errors about it [p].

(8.) *The Motion of the leſſer Congregation.* 258. Let the *eighth Motion* be the *Motion of the leſſer Congregation*, whereby the homogeneous Parts in any one Body ſeparate themſelves from the heterogeneous, or collect together; and whereby alſo diſtinct and entire Bodies, from a Similitude of Subſtance, embrace, cheriſh, and ſometimes collect and attract each other, and come together from a certain Diſtance: as when in Milk, the Cream, after ſome Continuance, floats a-top; and in Wine, the Lees ſink to the Bottom. Nor does it happen only through the Motion of Gravity and Levity, that ſome Parts ſhould riſe to the top, and others ſink to the bottom; but much more through an Appetite, that homogeneous Bodies have of meeting and uniting together [q].

Differs from the Motion of Want. 259. This Motion differs from the *Motion of Want* [r], in two reſpects; the one, that in the *Motion of Want* there is a *Stimulus*, or Incitement of a malignant and contrary Nature; whereas in this Motion, when all Obſtacles and Impediments are removed, the Parts unite by Congruity or Affection; tho' there be no foreign Nature preſent, to cauſe an Averſion. The other reſpect is, that the Union here proves cloſer, and, as it were, ſtronger, with greater Appetite or Choice. For, in the former, if the Thing at Enmity be avoided, the Bodies meet, tho' they are not greatly related; but in the latter, Subſtances come together, as if perfectly related by Similitude, and make, as it were, one Whole. And this Motion reſides in all compound Bodies; and would eaſily ſhew itſelf in each, if it were not bound down and reſtrained, by other Appetites, and Neceſſities of Bodies, which diſturb and hinder this Union [s].

160. This

[p] See the Article *Motion* in the *Sylva Sylvarum*.

[q] See above, §. 255.

[r] See above, §. 252.

[s] Theſe Appetites, or Laws of Motion, require the ſtricteſt Regard; as being the Things whereon all the Actions and Paſſions, or all the Phænomena and Effects, of Bodies, principally depend. See below, *Aph.* 50.

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260. This Motion is, generally, bound down three Ways; *viz.* (1.) by the Inactivity of Bodies; (2.) by the Check of a predominating Body; and, (3.) by external Motion. As to the firſt, 'tis certain, that tangible Bodies have a kind of Inactivity or Sluggiſhneſs, in a greater or leſs Degree, whereby they dread or reſiſt local Motion; ſo that, unleſs excited, they tend rather to continue in their preſent State, than to move or change for a better [t]. *Subdued three Ways; viz. firſt by Inactivity.*

261. This Sluggiſhneſs is taken off by three Means; *viz.* (1.) either by Heat; (2.) ſome eminent Virtue of a Body related: or, (3.) by a brisk and powerful Motion. And, *firſt*, as to the *Aſſiſtance of Heat*; it hence ariſes, that Heat is ſaid to ſeparate heterogeneous, and congregate homogeneous Bodies; which is a Definition of the *Peripatetics*, juſtly derided by Dr. *Gilbert*; as being like the defining a Man to be a Thing that ſows Corn, and plants Vineyards: a Definition formed only upon particular Effects. But the former Definition is ſtill more faulty, becauſe the Effects, whatever they are, proceed not directly from the Property of Heat; but only by Accident: for Cold will do the ſame, as we ſhall ſhew hereafter [u]; and is really owing to an Appetite which the homogeneous Parts have of coming together; the Heat only aſſiſting to diſpel the Sluggiſhneſs that before ſubdued, or bound down this Appetite. *Which is ſet free, (1.) by Heat.*

262. *Secondly*, As to the *Aſſiſtance of the Virtue communicated by a Body related*; this appears ſurprizingly in the armed Loadſtone, which excites in Iron a Virtue of detaining Iron, by ſimilitude of Subſtance; the Virtue of the Magnet here diſpelling the Sluggiſhneſs of the Iron. (2.) *By the Virtue of a Body related.*

263. And, *Thirdly*, for the *Aſſiſtance of Motion*; we ſee it in Arrows of Wood, with wooden Points, which penetrate farther into Wood than if they were tipt with Iron; through a Similitude of Subſtance; the Inactivity of the Wood being ſhook off by the Velocity of the Motion, as we before obſerved, under *Clandeſtine Inſtances* [w]. (3.) *And by brisk Motion.*

264. The binding of the Motion of the leſſer Congregation, by the *Check of a predominating Body*, appears in the Reſolution of Blood, and Urine, by Cold: for ſo long as theſe Fluids continue full of that active Spirit, which directs, governs and ſubdues their Parts, of every Kind, as Lord of the Whole; ſo long the different Parts do not collect together; by reaſon of the *Check* upon them: but after this Spirit is evaporated, or deaden'd, by Cold; then the Parts being relaxed, and unbridled, ſeverally come together; according to their natural Appetites. And hence it is that all Bodies, containing a ſharp Spirit, as Salts, and *The Motion of the leſſer Congregation ſubdued, ſecondly, by a Predominating Body.*

[t] This ſeems to be what is now called, by Mathematical Writers, the *Vis Inertiæ* of Matter. See alſo hereafter, §. 297 and 300.

[u] As particularly, in the freezing of Brandy, Wine, ſaline Liquors, *&c.* See below, *Aph.* 50.

[w] See above, *Aph.* 25. See alſo the *Sylva Sylvarum*, under the Article *Attraction*.

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the like, continue unſeparated[s]; *viz.* by reaſon of the permanent and durable Check of the preſiding, or over-ruling Spirit.

And, thirdly, *by external Motion.*

265. We have an eminent Example of *the Motion of the leſſer Congregation* being ſubdued by *external Motion*, in the Agitations of Bodies, which are preventive of Putrefaction: for all Putrefaction depends upon the uniting of the homogeneous Parts; whence there gradually enſues a Corruption or Deſtruction of the former State, or Appearance, and the Introduction of a new one: for a Solution of the old State muſt precede Putrefaction, which paves the Way to the Generation of a new Thing. And this Solution is the Collection of the homogeneous Parts together: and if not obſtructed, the Solution is ſimple; but if various Obſtacles intervene, Putrefaction enſues; that is the Rudiments of a new Generation. But if a frequent Agitation be made, by external Motion; then the Motion of Union, which is here delicate, ſoft, and requires Reſt from without, becomes diſturb'd, and ceaſes; as we find by numerous Examples.

Exemplified.

266. Thus the continual Agitation, or Running of Waters, prevents their putrefying: Winds purge and purify a peſtilential Air: Corn, by being turned and agitated, is kept ſound in the Granary: and, in ſhort, all Things that are kept in Agitation from without, do not eaſily putrefy from within[t].

In the Contractions of dry Bodies.

267. We muſt not here omit that Conjunction of the Parts of Bodies, from whence Hardneſs and Dryneſs principally proceed: for after the Spirit, or Moiſture turn'd into Spirit, is fled, from any porous Body; as Wood, Bone, Parchment, *&c.* the groſſer Parts forcibly contract, and come together; whereupon Hardneſs, or Dryneſs enſues: which we judge not to proceed ſo much from the *Motion of Connection*, as from the Motion, or Appetite, of Amity, or Union.

Motions meeting at a Diſtance.

268. As for the Motions that meet from a Diſtance, theſe are extraordinary and uncommon; yet may be found in more Things than have been uſually obſerved. We find Examples hereof in Bubbles, that ruſh into and diſſolve one another; in Medicines that attract or drain off Humours by Similitude of Subſtance[u]; two Violins in Uniſon with each other, when the one being ſtruck, the other will move, *&c.* We likewiſe ſuſpect this Motion prevails in the Spirits of Animals; tho' it remains perfectly unknown. 'Tis doubleſs exerted in the Loadſtone, and animated Iron.

Four diſtinct Motions of the Loadſtone.

269. But with regard to the Loadſtone, there are four diſtinct Motions, Virtues, or Operations, that ſhould not be confounded; tho' thro' Admiration and Aſtoniſhment, Men have blended them together. The *firſt* is, the Attraction betwixt Magnet and Magnet; Iron and the Magnet;

[s] *Viz.* Unreſolved into their different Principles, or heterogeneous Parts.
[t] See the *Sylva Sylvarum*, under the Article *Putrefaction.*
[u] *Viz.* As Rhubarb does the Bile, *&c.* 2

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Magnet; or animated Iron and Iron. The *ſecond* is, the Verticity of the touch'd Needle, or its Property of pointing North and South; together with its Variation, or Declination from that Direction. The *third* is the Virtue of penetrating Gold, Glaſs, Stone, *&c.* And the *fourth* is, the Communication of Virtue from the Stone to Iron, and from Iron to Iron, without a Communication of Subſtance[w]. But, at preſent, we ſpeak only of the firſt of theſe Virtues; that of Approach, or Attraction.

The Attraction betwixt Quickſilver and Gold.

270. There is alſo a remarkable Motion of Attraction between Quickſilver and Gold; ſo that Gold will attract Quickſilver, tho' it be made up into Ointments. And thoſe that work much among the Vapours of Quickſilver, commonly hold a Piece of Gold in their Mouths, to collect the mercurial Effluvia; which would otherwiſe penetrate the Skull, and Bones of the Body, *&c.* and the Gold ſo employ'd, ſoon after becomes white[x]. And ſo much for the Motion of the leſſer Congregation.

(9.) *Magnetical Motion, or the Motion of Attraction in large Bodies.*

271. Let the *ninth Motion* be *Magnetical Motion*, which, tho' a Thing of the ſame Kind with the *Motion of the leſſer Congregation*; yet, if it operate to great Diſtances, and upon large Maſſes of Matter, it deſerves a ſeparate Enquiry; eſpecially if it neither, like moſt other Motions, begins with Contact; nor comes to that at laſt; as all the Motions of Congregation do; but only raiſes Bodies, or makes them ſwell, without any farther Effect. For if the Moon raiſes the Waters, or makes moiſt Things ſwell; or if the Sphere of the fixed Stars attracts the Planets, towards their *Apogees*; or if the Sun attracts *Venus* and *Mercury*, and keeps them always near its Body; theſe Motions ſeem not juſtly to fall under thoſe of the *greater* or *leſs Congregation*; but to be certain *middle* and *imperfect Motions of Aſſemblage*; that ſhould, therefore, conſtitute a particular Species.

(10.) *Motion of Avoidance.*

272. Let the *tenth Motion* be the *Motion of Avoidance*; which is a Motion contrary to that of the *leſſer Congregation*; and makes Bodies, by Antipathy[y], fly from, and keep off, others, that are diſagreeable to them; or ſeparate themſelves therefrom; or refuſe to mix therewith. For altho' this Motion may ſeem, in ſome Caſes, to be only an accidental, or a conſequential Thing, with reſpect to the *Motion of the leſſer Congregation*; as homogeneous Bodies cannot come together, till ſuch as are heterogeneous be excluded and removed; yet it ſhould be particularly mention'd,

[w] See the Article *Magnetiſm*, in the *Sylva Sylvarum*.

[x] It has been lately queſtion'd, whether, when Perſons are ſalivated by Mercury, a Piece of Gold will be whiten'd, by being held, for ſeveral Hours, to any Part of the Body, where no Mercury, from without, is ſuppoſed to come; or none beſides what has paſſed thro' the Courſe of Circulation, along with the animal Juices.

[y] Let it always be remember'd, that the Author conſtantly chuſes the old Words, where he may uſe them ſo as to convey his own Meaning, with any tolerable Advantage. This is the more neceſſary to be remarked, becauſe Men are extremely apt to take particular Diſguſts, as well as particular Likings, to Words and Phraſes.

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tion'd, and made a Species; becauſe, in many Things, the Appetite of *Repulſion* ſeems more capital than the Appetite of *Attraction*.

Exemplified in Taſtes and Odours.

273. This Motion appears remarkably in the Excretions of Animal; and no leſs in the Objects odious to ſome of the Senſes; particularly to the Smell and Taſte: for a fetid Odour is ſo repulſed by the Organ of Smell, that it even cauſes a Motion of Expulſion, by Conſent, in the Mouth of the Stomach [a]. A bitter and horrid Taſte is ſo repulſed by the Palate and Throat, as to cauſe, by Conſent, a particular Shake, or Shuddering of the Head.

In the Antiperiſtaſis of Cold and Heat.

274. This Motion of Avoidance has alſo place in other Things; for it appears in ſome Kinds of *Antiperiſtaſis* [a]. Thus the Cold in the middle Region of the Air, ſeems to be a Repulſion of the Cold from the Confines of the celeſtial Bodies: as thoſe great Heats and Burnings, found in ſubterraneous Places, ſeem to be a Repulſion of Heat, from the inner Parts of the Earth. For Heat and Cold deſtroy each other, when their Degrees are ſmall; but when collected into large Maſſes, or, as it were, into full Armies, they violently repel, and diſplace each other in the Conflict.

In odoriferous Bodies, and Quickſilver.

275. 'Tis alſo reported, that Cinnamon, and other odoriferous Bodies, ſuſpended in a Jakes, or other fetid Place, retain their Scent longer; as thus keeping themſelves within, and refuſing to mix with Matters of an ill Odour. And Quickſilver, which, of itſelf, unites into a continued Maſs, is, by grinding with a little Spittle, Turpentine, &c. kept aſunder; ſo that its Parts unite not again, by reaſon of the Averſion they have to the Bodies employ'd; from which, as every way mix'd in among them, they ſhrink, and ſhut themſelves up; their Appetite of avoiding theſe Particles interpoſed, being greater than their Appetite of uniting with their own ſimilar Parts: and this is what they call the *killing of Quickſilver*.

In Oil and Water.

276. So, again, the Reaſon that Oil will not mix with Water, is not ſo much owing to their Difference of Gravity, as to their want of Conſent: which appears from hence, that Spirit of Wine, tho' lighter than Oil, yet mixes with Water. But the *Motion of Avoidance* is moſt remarkable in *Nitre*, and the like crude Bodies, which fly from Flame; as we find in Gunpowder, Quickſilver, and Gold [b].

(11.) *Motion of Aſſimilation.*

277. Let the *eleventh Motion* be the *Motion of Aſſimilation*, *Motion of Self-Multiplication*, or *Motion of Simple Generation*. By *Simple Generation*, we do not underſtand the Generation of entire Bodies; ſuch as Plants, and Animals; but of ſimilar Bodies: ſo that by this Motion, Bodies convert other Bodies related to them, or, at leaſt, ſuch as are well diſpoſed and prepared to be converted, into their own Subſtance and Nature.

278. Thus

[a] *Viz.* A Retching.

[a] See *Vol.* III. *p.* 564, 565.

[b] *Viz.* Quickſilver confined, and heated; and in the *Aurum Fulminans*. See *Vol.* III. *p.* 494, &c.

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278. Thus Flame multiplies itſelf upon unctuous Exhalations, and oily Bodies, and generates new Flame; Air multiplies itſelf upon Water, and produces new Air; and the vegetable and animal Spirit multiplies itſelf, or feeds upon the ſoft, aqueous, and oleaginous Parts, and begets new Spirit; the ſolid Parts of Plants and living Creatures, as the Leaves, the Flowers, the Fleſh, the Bones, *&c.* are all aſſimilated from the Juices of the Aliment; and thus beget new Matter, and new Subſtance upon themſelves ſucceſſively [c]. For let no one dream, with *Paracelſus*, (who appears as if blinded by his Diſtillations,) [d] that Nutrition is performed merely by Separation; and that the Eyes, the Noſe, the Brain, the Liver, *&c.* lie concealed in Bread or Food; or that the Roots, the Leaves, and Flowers of Vegetables, are lodged in the Juice of the Earth: for he aſſerts, that as the Workman, by ſeparating and paring off what is ſuperfluous, from a rude Block of Stone or Wood, educes out of it a Leaf, a Flower, an Eye, or a Noſe; ſo the *Archæus*, that internal Operator of his, produces all the different Limbs, and Parts, out of the Aliment, by Separation and Rejection.

Exemplified in the Nutrition and Aſſimilation of Plants and Animals.

Paracelſus's Notion of Nutrition, cenſured.

279. But, to leave ſuch trifling; it is certain, that all the Parts, as well ſimilar as organical, in Vegetables and Animals, firſt attract, with ſome Election or Choice, nearly the ſame common, or not very different Juices, for their Aliment; and afterwards aſſimilate, or convert, them into their own Nature [e]. Nor is this Aſſimilation, or *ſimple Generation*, performed only in animate Bodies; but inanimate Bodies alſo partake thereof; as was formerly obſerved of Flame and Air [f]. And even the languid Spirit contain'd in all tangible inanimate Bodies, conſtantly endeavours to digeſt the groſſer Parts, and turn them into Spirit, to be afterwards diſcharged; whence proceeds Diminution of Weight, and Dryneſs, as was formerly obſerved [g].

Nutrition, how performed

280. Nor muſt we, in the Buſineſs of Aſſimilation, reject that Accretion commonly diſtinguiſh'd from Aſſimilation; as when Clay, mix'd among Stones, concretes, and is turn'd into a ſtony Matter; or when the Scales of the Teeth are turn'd into a Subſtance as hard as the Teeth themſelves, *&c.* For we judge, that all Bodies have an Appetite of aſſimilating, as well as of uniting, what is homogeneous to themſelves; but that both Powers are bound down, or ſuppreſſed, tho' not in the ſame manner. All theſe Ways of binding, and the correſpondent ones of looſing, ſhould be diligently enquired after; becauſe they regard the Prolongation of Life, or the Alleviation of old Age [h].

Accretion.

[c] See the *Hiſtory of Life and Death*, the *Hiſtory of Winds*, and the *Sylva Sylvarum*, paſſim.
[d] See *Vol.* II. *p.* 54.
[e] See the *Sylva Sylvarum*, under the Article *Vegetation.*
[f] See above, *Aph.* 42.
[g] See above, *Aph.* 40.
[h] See the Author's *Hiſtory of Life and Death*, Vol. III.

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The Motion of Aſſimilation regards the Propagation of Bodies.

281. Laſtly, 'tis worth obſerving, that in the ten preceding Motions, Bodies ſeem only to affect, or endeavour, the Preſervation of their own Natures; but in this eleventh, to endeavour their Propagation.

(12.) *The Motion of Excitation.*

282. Let the *twelfth Motion* be the *Motion of Excitation*; which ſeems of the ſame kind with the *Motion of Aſſimilation*; as being diffuſive, communicative, tranſitive, and multiplicative, like that; ſo as generally to agree therewith in the Effect; tho' they differ in the Subject, and Manner of effecting: for the *Motion of Aſſimilation* proceeds with a kind of Sway, Authority, and Power; as it commands and compels the Matter aſſimilated, to turn and change into the Matter aſſimilating; wereas the *Motion of Excitation* proceeds as if it were by Art, Inſinuation, and Stealth; thus ſolliciting and diſpoſing the excited Matter to aſſume the Nature of the Matter exciting. So, again, the *Motion of Aſſimilation* multiplies and transforms Bodies and Subſtances; and thus produces more Flame, more Air, more Spirit, more Fleſh, *&c.* but in the *Motion of Excitation* none but Virtues are multiplied and communicated: whence there is generated more Heat, more Magnetiſm, more Putrefaction, *&c.*

Wherein it agrees, and differs, from the Motion of Aſſimilation.

Exemplified in Heat.

283. And this Motion is remarkably found in *Heat* and *Cold:* for Heat does not diffuſe itſelf in heating, by the Communication of the original Heat; but only by exciting the Parts of the Body to that Motion which is the *Form of Heat*; as was mentioned above[i]: and, therefore, Heat is much ſlower, and more difficultly excited in Stone or Metal, than in Air; by reaſon of the Indiſpoſition and Unfitneſs of thoſe Bodies to admit of that Motion: whence, poſſibly, there may lodge in the Bowels of the Earth, Matters which cannot be heated; as being, by a greater Condenſation, depriv'd of that Spirit with which this Motion of Excitation generally begins[k].

In the Magnet, &c.

284. So the Magnet gives Iron a new Diſpoſition of Parts, and a conformable Motion; whilſt itſelf loſes nothing of its Virtue. So likewiſe Bakers Leaven, Yeaſt, Rennet, and certain Poiſons, reſpectively excite and follicit a ſucceſſive and continued Motion, in the coming of Cheeſe, the making of Bread, the fermenting of Beer, and in poiſoning the human Body; and this not ſo much by the Power of the exciting Matters, as by the Prediſpoſition and eaſy yielding of the Bodies excited.

(13.) *The Motion of Impreſſion.*

285. Let the *thirteenth Motion* be the *Motion of Impreſſion*; which likewiſe ſeems of the ſame Kind with the *Motion of Aſſimilation*; and is the moſt ſubtile of diffuſive Motions: but we think proper to make it a Species, by itſelf, becauſe of a remarkable Difference it has in reſpect of the two former. For the *ſimple Motion of Aſſimilation* transforms Bodies themſelves; ſo that if what gave the firſt Motion be removed, it is of no Significance to what follows; for the firſt lighting up of Flame, or the firſt Converſion into Air, makes nothing to the ſucceeding Generation of

Differs from the two preceding Motions.

[i] See *Aph.* 13. and 20.

[k] Conſult the *Tables* above laid down, *Aph.* 11, 12, 13, 18, 20.

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of Flame or Air. So, likewiſe, *Motion of Excitation* remains perfect, for a conſiderable Time after the firſt Mover is taken away: as in a heated Body, after what gave the firſt Heat is removed; in animated Iron, after the Loadſtone is laid aſide; and in Bread before baking, when the Leaven is taken away. But the *Motion of Impreſſion*, tho' it be diffuſive, and tranſitive, yet ſeems conſtantly to depend upon the firſt Mover; ſo as if that be taken away, it immediately ceaſes, and comes to nothing. This Motion is, therefore, performed momentaneouſly, or at leaſt ſuddenly: for which Reaſon we call the *Motions of Aſſimilation and Excitation*, the Motions of *Jupiter*'s Generation; becauſe the Generation remains: but this *Motion of Impreſſion*, the Motion of *Saturn*'s Generation; becauſe the Offspring is preſently devoured and ſwallowed up.

Depends upon the firſt Mover.

286. This Motion ſhews itſelf in three Things; *viz.* (1.) the Rays of Light, (2.) the Percuſſion of Sounds, and (3.) the Communication of magnetical Virtues. For (1.) when Light is removed, Colour and all viſible Appearances immediately vaniſh; and (2.) upon Removal of the firſt Percuſſion, and the Concuſſion of the Body conſequent thereto, Sound ſoon vaniſhes. For altho' Sounds are toſs'd, and agitated, in their Medium, by Winds, as it were by Waves; yet it muſt be carefully obſerved, that Sound does not continue ſo long as the Reſounding continues. For when a Bell is ſtruck, the Sound ſeems to continue a good while after; but it would be very erroneous hence to conceive, that the Sound fluctuated, and hung in the Air, all that while: for the Reſounding is not the ſame, numerical Sound, but a new one; as appears plainly by ſtopping the Body ſtruck: ſo if the Bell be ſtrongly compreſs'd whilſt it reſounds, and be thus rendered motionleſs, the Sound inſtantly ceaſes, and no more Reſounding is heard. So, likewiſe, in ſtringed Inſtruments, if a String be touched, with the Finger, after the firſt Percuſſion, the Reſounding preſently ſtops. (3.) And, *laſtly*, when the Magnet is removed, the Iron ſuſpended by it preſently falls down: but the Moon cannot, by us, be removed from the Sea; nor the Earth from a ponderous Body in falling; and, therefore, no Experiment can, in this reſpect, be made on them; tho' the Caſe be, otherwiſe, the ſame [1].

Exemplified in Light, Sound, And Magneſm.

287. Let the *fourteenth Motion* be the *Motion of Configuration*, or *Situation*; whereby Bodies ſeem not to affect coming to, or flying from, one another; but a certain *Poſition*, *Situation*, and *Configuration*, with reſpect to others. This, indeed, is a very abſtruſe Motion, and little enquired into: and, in ſome Caſes, it ſeems to be without a Cauſe; tho' we judge it not to be really ſo.

(14.) *The Motion of Configuration.*

[1] Sir *Iſaac Newton* attempts to ſhew, by Calculation, that the Moon, and whole Solar Syſtem, may be ſenſibly affected by the Attraction of the Earth; and conjectures that the Effect will become more ſenſible hereafter, by cauſing a great Diſturbance in the celeſtial Motions. See *Newton. Princip.* Lib. III.

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Exemplified in the Motion of the Heavens.

288. Thus, if it ſhould be aſked, why the Heavens rather revolve from Eaſt to Weſt, than from Weſt to Eaſt; or turn upon Poles placed near the North and South, or nearer the Bear, than near Orion, or any other fix'd Star; the Queſtion would appear wild and ſurprizing; as being ſuppoſed a Thing that ought to be received from conſtant Obſervation and Experience. And, 'tis true, there are, in Nature, certain ultimate Reſorts; and Things without a Cauſe: but this does not ſeem to be one of them. For we judge it to proceed from a certain Harmony, and Conſent, of the Univerſe, hitherto unobſerved. And if we admit the Motion of the Earth from Weſt to Eaſt, the ſame Queſtion would recur; becauſe the Earth alſo muſt move upon certain Poles; but why ſhould theſe Poles be placed rather where they are, than elſewhere?

The magnetic Needle.

And the Arrangement of Concretes.

289. So, likewiſe, the Verticity, or the Direction and Variation, of the magnetic Needle, may be referr'd to this *Motion of Configuration*. And there are found in Bodies, both natural and artificial, eſpecially ſuch as are conſiſtent, and not fluid, a certain Diſpoſition and Situation of Parts, as it were in the manner of Threads and Fibres; which Arrangements ſhould be diligently ſought after: for without a Diſcovery thereof, ſuch Bodies cannot be commodiouſly treated, managed, or wrought [m].

(15) *The Motion of Tranſition.*

290. Let the *fifteenth Motion* be the *Motion of Tranſition*, or *Motion of Paſſage*; whereby the Virtues of Bodies are more or leſs hinder'd, or promoted, on Account of their Mediums; according to the Nature of the Body, and the Virtue of the Medium: for one Medium ſuits beſt with Light, another with Sound, another with Heat and Cold, another with magnetic Virtues, *&c.* reſpectively.

(16.) *The Regal, or Political Motion.*

291. Let the *ſixteenth Motion* be what we call by the Name of *Regal*, or *Political Motion*; whereby the Parts predominating and ruling in any Body, curb, ſubdue, and regulate the other Parts; and compel them to unite, ſeparate, fix, move, and range themſelves, not according to their own Appetites; but as it is conducive to the Well-being of that over-ruling Part; ſo as to make a kind of political Government, exerciſed by the ruling Part, over the Parts in Subjection to it.

Exemplified in Spirits.

292. This Motion principally reigns in the Spirits of Animals, and regulates and tempers all the Motions of the other Parts, ſo long as itſelf remains in Vigor. 'Tis alſo found, in a leſs Degree, in other Bodies, as was ſaid above of Blood and Urine [n]; which do not reſolve till the Spirit that mix'd and held their Parts together, is evaporated or ſtifled. Nor is this Motion peculiar to Spirits; tho' theſe govern or preſide

[m] Thus, for Example, the Diamond is flaky or leafy; and has a Grain, or a perpetual Situation of Plates; ſo as in this reſpect to reſemble *Talc*, &c. Wood has its Grain, or longitudical Direction of Fibres, *&c.* And the Knowledge of thoſe Properties in Bodies, directs the Ways of treating or managing them; as we ſee in the cutting and poliſhing of Diamonds, the ſplitting and planing of Wood, *&c.*

[n] See above, §. 264.

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ſide in moſt Bodies, by reaſon of their Velocity and Penetration; but in Bodies more condenſed, and not full of a vivid, briſk, Spirit, (ſuch as is found in Quickſilver, and Vitriol,) the groſs Parts rather have the Aſcendant; ſo that unleſs this Yoke, or Obſtacle, could, by ſome means, be ſhook off, or removed, there are no Hopes of any new Transformations to be wrought in ſuch Bodies.

293. Let no one here imagine, that we forget our immediate Buſineſs; and (whereas this Arrangement and Diſtribution of Motions regards nothing more than the better enquiring into, and diſcovering their Predominancy, by the *Inſtances of Reluctance*[o];) here treat of this *Predominancy*, among the Motions themſelves: for in the Deſcription of this *Regal Motion*, we do not treat of the Predominancy of Motions, or Virtues; but of the *Predominancy of the Parts in Bodies:* this being that Predominancy which conſtitutes the peculiar Species of *Motion*, at preſent under Conſideration.

294. Let the *ſeventeenth Motion* be the *Spontaneous Motion of Rotation*; whereby Bodies in Motion, and favourably ſituated, enjoy their own Nature, follow themſelves, and no other Thing; but run, as it were, into their own Embraces. For Bodies ſeem either to move without any certain End; or perfectly to reſt; or elſe to be carried to a Period, where they may either revolve, or reſt according to their Nature. But the Bodies that are favourably ſituated, if they move at all, move in a Circle; that is, with an eternal, and infinite Motion. The Bodies that are well ſituated, and yet abhor Motion, are perfectly at reſt: but ſuch as are not well ſituated, move in a ſtrait Line; that is, in the ſhorteſt Way, to the Aſſociation of Bodies of their own Nature.

(17.) *Spontaneous Motion of Rotation.*

Motion in general, of three Kinds.

295. This *Motion of Rotation* has nine Differences; regarding (1.) the Centre, about which the Motion is performed; (2.) the Poles, with regard to which they move; (3.) the Circumference, in reſpect to its Diſtance from the Centre; (4.) the Degree of Velocity; (5.) the Conſecution, or Order, of the Motion; as whether from Eaſt to Weſt, or Weſt to Eaſt, *&c.* (6.) the Declination from a perfect Circle, by Spirals, farther off, or nearer to the Centre[p]; (7.) the Declination from a perfect Circle, by Spirals, farther from, or nearer to the Poles; (8.) a greater or leſs Diſtance of the Spirals from one another; (9.) and laſtly, the Variation of the Poles themſelves, if movable: which Particulars belong not to Rotation, unleſs it be circular.

Motion of Rotation has nine Differences.

296. And this Motion, according to common and more ſettled Opinion, is held to be the proper Motion of the heavenly Bodies. But there is a great Controverſy, with regard to this Motion, between certain of the Ancients, as well as the Moderns; who, ſome of them, attribute Rotation to the Earth. But, perhaps, it were a more proper Subject

Whether the Motion of Rotation be proper to the celeſtial Bodies.

[o] See above, *Aph.* 48, §. 241.
[p] *Viz.* Their elliptical Motion.

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of Controverſy, (if the Thing be not already paſt Diſpute,) whether this Motion, ſuppoſing the Immobility of the Earth, be limited or contain'd within the Bounds of the Heavens; or rather deſcends, and becomes communicated to the Air and Waters [q]. But for the rotatory Motion of Projectiles, we refer it to the *Motion of Liberty* [r].

(18.) *The Motion of Trepidation.*

297. Let the *eighteenth Motion* be the *Motion of Trepidation*; whereto, as it is underſtood by Aſtronomers, we give no great Credit. But we meet with this Motion, upon ſeriouſly ſearching into the Appetites of natural Bodies: and it ſeems proper to conſtitute it a Species by itſelf. This *Motion* is, as it were, a Motion of eternal Captivity: for where Bodies are not perfectly well placed, or ſituated, according to their Natures, and yet are not in a perfectly bad State, they perpetually tremble, and prove reſtleſs; neither content with their preſent Situation, nor daring to proceed farther.

Exemplified.

298. This Motion is found in the Hearts and Pulſes of Animals; and muſt neceſſarily reſide in all Bodies that remain in a doubtful State, between Convenience and Inconvenience; ſo as that when ſtretched or drawn, they try to free themſelves; at which Time they again ſuffer a Repulſion; and yet are conſtantly trying.

(19.) *Motion of Indolence.*

299. Let the *nineteenth* and *laſt Motion* be that which, tho' it ſcarce anſwers to the Name of a Motion, is yet clearly of that Kind; *viz.* the *Motion of Indolence*; or, as we may otherwiſe call it, the *Motion of Dreading* or *Reſiſting of Motion* [s].

Exemplified.

300. By this Motion it is that the Earth ſtands firm in its own Bulk; whilſt the Extremities thereof move themſelves towards the Middle: not to an imaginary Centre, but to Union. By this Appetite, likewiſe, all Bodies violently condenſed, have an Averſion to Motion; their ſole Appetite being not to move: and altho' they ſhould be inſtigated and incited to Motion, infinite Ways; yet they obſtinately preſerve their own Nature, as far as poſſibly they can. But if they are compelled to move; they ſtill conſtantly endeavour to regain Reſt, and recover their former State, ſo as, if poſſible, to move no more. And, in this Caſe indeed, they become agile and ſwift; and, as if impatient of all Delay, ſtrive with Velocity and Rapidity, to replace themſelves. But we have only a partial Image, or imperfect Notion, of this Appetite; becauſe here, with us, no tangible Bodies are condenſed to the utmoſt; on Account of the Influence and Agency of the celeſtial Bodies upon them [t]: and beſides, they alſo have ſome Mixture of Spirits [u].

301. And

[q] See *Vol.* III. *p.* 620.
[r] See above, §. 244. See alſo *Vol.* III. *p.* 606, 607.
[s] See above, §. 261.
[t] See above, §. 283.
[u] See the *Table* for a legitimate Enquiry into Motion, *Vol.* III. *p.* 322.

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301. And thus we have propoſed the Species, or *ſimple Elements of Motions, Appetites, and active Virtues*, which are moſt univerſal in Nature, and under which much natural Knowledge is contained. We deny not that other Species may, perhaps, be added; that theſe Diviſions may be better adjuſted to the true Diviſions or Ramifications of Things; and that they may be contracted in Number. But we mean not this of any abſtract Diviſions; as if any one ſhould ſay, that Bodies deſired either the Conſervation, Exaltation, Propagation or Fruition of their own Natures; or that the Motion of Things tends to the Conſervation and Good, either of the Univerſe, as the *Motions of Reſiſtance*, and *Connection*; or of the larger Univerſalities, as the *Motion of the greater Congregation*, *Rotation*, and *Indolence*; or of *particular Forms*, as in all the reſt: for tho' this were true; yet it would be Speculative, and of little Uſe; unleſs it terminated in Matter, and Structure, according to the true Diviſions, or Lines of Nature. *Recapitulation of the Doctrine of Motions.*

302. In the mean time they will ſuffice, and be of good Service, in examining the Predominancies of Virtue, and ſearching out the *Inſtances of Reluctance*, which is the preſent Buſineſs. For of the *Motions* here laid down, ſome are abſolutely unconquerable; ſome are more prevailing than others, ſo as to bind, check and diſpoſe thoſe others; ſome dart themſelves further out than others; ſome again excel others, in Point of Time and Velocity; and laſtly, ſome cheriſh, ſtrengthen, enlarge and accelerate others. *Uſe of this Doctrine.*

303. The *Motion of Reſiſtance* is adamantine, and invincible; but whether the *Motion of Connection* be invincible or no, is a Queſtion: for we determine neither for nor againſt a *Vacuum*, whether interſperſed or collective: only conceive it plain, that the Reaſon why a *Vacuum* was introduced, by *Leucippus* and *Democritus*, (*viz.* becauſe without it the ſame Bodies cou'd not poſſeſs and fill a greater or leſſer Space,) is ill founded: becauſe Matter may wrap and unwrap itſelf in Space, within certain Limits, without the Interpoſition of Vacuity. Nor has Air two thouſand times more Vacuity than Gold; as on that Suppoſition it ought to have. And this appears ſufficiently from the extremely powerful Virtues of pneumatical Bodies; (which muſt otherwiſe float like fine Duſt *in Vacuo*;) and from many other Proofs [x]. *The Motion of Reſiſtance invincible; but not perhaps that of Connection.*

304. But the other Motions govern and obey each other, according to their Proportions of Strength, Quantity, Velocity, Sphere of Activity; and alſo according to the Aids and Impediments they meet with. For Example, there are armed Loadſtones that will attract, and ſuſpend, ſixty times their own Weight of Iron; ſo much does the *Motion of the leſſer Congregation* prevail over the *Motion of the larger:* but this Motion yields, if the Weight be greater. Leather extends to a certain Degree, without *The other Motions govern and obey each other.* *Exemplified.*

[x] See the Author's *Hiſtory of Condenſation and Rarifaction*, paſſim. See alſo *Vol.* III. p. 610.

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out breaking; and ſo far the *Motion of Continuity* over-rules the *Motion of Tenſion*; but if the Tenſion be carried further, the Leather breaks, and the *Motion of Continuation* gives way. Water runs out at a Crack of a certain Size; in which Caſe, the *Motion of the greater Congregation* prevails over the *Motion of Continuity:* but if the Crack be ſmaller, the *Motion of the greater Congregation* gives way; and that of *Continuity* prevails. If a Muſquet be charged with Sulphur, it will not throw out the Ball; in which Caſe, the *Motion of the greater Congregation* overcomes the *Motion of Dilatation:* but when the Muſquet is charged with Gunpowder, the Motion of Dilatation in the Sulphur prevails, by the Aſſiſtance of the Motion of *Dilatation*, and of the Motion wherewith Nitre flies from Flame. And the like is to be underſtood of the other Caſes. For the *Inſtances of Reluctance*, which indicate the Predominancy of Virtues, and the Proportions wherein they conquer, and yield, are on all Sides to be ſought out, with great Diligence.

The Manner and Proportion wherein Motions yield, to be obſerved.

205. So, likewiſe, the Manner and Proportions wherein Motions give way, are to be carefully examined; as whether they yield entirely, or rather reſiſt to a Degree, but are ſubdued: for in the Bodies among us, there is no ſuch Thing as true and perfect Reſt; neither in the Wholes, nor in the Parts; but only to Appearance. And this apparent Reſt either proceeds from an *Æquilibrium*, or an abſolute Predominancy of Motions: by an *Æquilibrium*, as in the Balance; which reſts on both Sides, when the Weights are equal: by *Predominancy*, as in Siphons, or perforated Watering-Pots; where the Water reſts, and is kept from falling through, by the Prevalency of the *Motion of Connection*[y].

The Reſiſtance of Motions to be diſcovered.

306. But as we ſaid above[z], it muſt be obſerved, how far theſe yielding Motions reſiſt; for if any Perſon ſhould be forcibly bound Hand and Foot, or otherwiſe detained, notwithſtanding all the Struggle he could make; his Reſiſtance is not the leſs, becauſe it does not prevail. And the State of this Matter, (*viz.* whether the yielding Motion be, as it were, annihilated by the Predominancy; or whether the Reſiſtance be continued, tho' latent, in the Conflict) may perhaps appear from *Concurrency*. For Example; let Trial be made in Shooting, whether a Muſquet, or Cannon, fired at its utmoſt Random, or Point-blank Diſtance, throws a Bullet more forcibly upwards, where the Percuſſion is ſimple; or downwards, where the Motion of Gravity *concurs*, or conſpires with the Stroke.

The Rules of Predominancy to be collected.

307. Laſtly, the *Canons*, or Rules of the Predominancies, which occur, ſhould be collected; as for Example, that *the more common the Good which is deſired, the ſtronger the Motion*; and that *the Motion of Connection, which regards the Communion of the Univerſe, is ſtronger than the Motion of Gravity, which regards the Communion of Denſe Bodies*; again, *that the Appetites*

[y] See above, §. 243.
[z] §. 305.

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petites of a private Good do not generally prevail againſt the Appetites of a more publick Good, unleſs in ſmall Quantities. And it were to be wiſhed this alſo obtained in Civil Affairs [a].

APHORISM XLIX.

308. Among *Prerogative Inſtances*, we aſſign the *twenty-fifth Place* to *Intimating Inſtances*; that is, ſuch as hint, or point out, the Advantages or Conveniencies of Mankind: for bare Power and Knowledge only enlarge, but do not enrich human Nature; and therefore ſuch Things as principally appertain to the Uſes of Life, are to be ſelected, or cull'd out from the general Maſs of Things [b]. The more proper Place for ſpeaking of theſe, will be when we treat of *Reducing Knowledge to Practice* [c]. But through the whole Buſineſs of *Interpretation*, we conſtantly, in every particular Enquiry, or upon every Subject, allot a Place for the *Table of human Uſes*; or the *Table of Deſiderata, Wiſhes*, or *Optatives* [d]: for it is a part of Knowledge to enquire, and even to wiſh diſcreetly. (25.) *Intimating Inſtances.*

APHORISM L.

309. In the *twenty-ſixth* Place, among *Prerogative Inſtances*, come *Sovereign*, or *General Inſtances*; that is, ſuch as regard a Variety of Particulars, and occur frequently: whence they greatly ſave Trouble, and prevent the Search after new Demonſtrations. But for the Inſtruments themſelves, and the particular Managements, the more proper Place to treat of them is, when we come to the *Ways of Practice, and the Method of Experimenting* [e]: for the Things hitherto known and uſed, in the Exerciſe of all particular Arts, muſt be deſcribed. But at preſent we will ſubjoin a few Generals, with regard thereto; in the way of exemplifying theſe *Sovereign Inſtances*. (26.) *Sovereign Inſtances.*

310. Man, therefore, (beſides the Buſineſs of ſimply putting Bodies together, and taking them aſunder) operates upon natural Bodies ſeven principal Ways; *viz.* (1.) by excluding ſuch Things as might hinder or diſturb the Proceſs; (2.) by compreſſing, extending, agitating, and the like; (3.) by Heat or Cold; (4.) by continuing the Matters in a convenient Place; (5.) by the moderating and governing of Motion; (6.) by particular Conſents; (7.) by a ſeaſonable and due Change, Alteration, or Series and Succeſſion, of all the preceding Ways, or at leaſt ſome of them. *The ſeven Ways, or Means of Practice.*

311. With

[a] Here is an Opening in that Kind of *Perſian Magic*, which the Author has proſecuted farther on another Occaſion. See *Vol.* II. *p.* 5. Let the ſeveral Kinds of Motion, above laid down, be compared with thoſe of Sir *Iſaac Newton*, and the modern *Mathematical Writers*.

[b] See *Vol.* III. *p.* 17, 18, 19, *&c.* and the *Sylva Sylvarum*, paſſim.

[c] A Part not gone upon in the *Novum Organum*. See above, *Aph.* 21.

[d] See the Cloſe of the Hiſtory of Winds, *Vol.* III. *p.* 497. and *Condenſation and Rarifaction*, p. 571.

[e] See the *Sylva Sylvarum* throughout. See alſo the *de Augment. Scientiarum, Sect.* 12.

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The Inſtruments and Contrivances required in the firſt way; viz. *Containing Veſſels, and Covers.*

311. With regard to the *firſt* Means of Practice; *viz.* by excluding ſuch Things as might hinder or diſturb the Proceſs; the common Air, which is every where at hand, inſinuating itſelf, and the Rays of the Celeſtial Bodies, cauſe great Diſturbance; and therefore ſuch Things as exclude them, may deſervedly be accounted *Sovereign*. And to this belong the Matter and Strength, or Thickneſs, of the Veſſels, wherein the Subject, or Bodies prepared for the Operation, are included; as alſo the exact Methods of cloſing up theſe Veſſels, with proper and ſtrong Materials, or with *Philoſophical Luting*, as the Chemiſts call it. So likewiſe the cloſing of Veſſels, by means of Liquors applied on the outſide, is a very uſeful Thing; as when they pour Oil upon Wine, or other vegetable Juices: for the Oil floating on the top, like a Stopple, excellently preſerves them from the Injuries of the Air. Nor are Powders unfit for this Purpoſe; which tho' they contain a Mixture of Air, yet expel and prevent the Force of the external Air; as we ſee in the Preſerving of Grapes, and other Fruits, by Sand or Flower. So again, Wax, Honey, Pitch, and the like tenacious Bodies, are properly uſed with a View to cloſe Veſſels perfectly, and exclude the external Air, or Atmoſphere. And we have ſometimes buried Veſſels and other Bodies in Quickſilver; the denſeſt Fluid that can be employ'd for this Purpoſe.

Caves, Pits, and Wells.

312. Pits, Caves, and ſubterraneous Receptacles, are likewiſe of great Uſe, to exclude the Sun; and the open Air, which preys upon Things. And theſe kinds of Caves are uſed, in the Northern Part of *Germany*, for Granaries [f]. And to this Head belongs alſo the ſuffering of Bodies to lie at the bottom of Water. Thus I remember to have heard, that certain Bottles of Wine, let down to cool in a Well, being by a caſual Neglect left there and forgotten, for many Years, but at length drawn up again; the Wine was found to be grown, not vapid or flat, but much more generous and noble [g]. But if it ſhould be required to ſink Bodies to the bottom of a River, or the Sea, without their touching the Water, or without being included in ſtopp'd Veſſels, and yet be ſurrounded by Air; the Diving-bell, which is a Veſſel ſometimes employ'd for working upon Wrecks, or Ships under Water, may here prove of good Service.

The Diving-Bell.

313. This Veſſel is made of Metal, hollow like a Cask; and being let down with its Bottom parallel to the Surface of the Water, it carries along with it all the Air it contains, to the bottom of the Sea [h]; and having three Feet to ſtand upon, ſomewhat ſhort of the Height of a Man, the Diver, when he wants to breathe, conveys his Head into the Cavity of the Veſſel; where being refreſh'd with Air, he afterwards continues his Work. And we have heard, that a Boat, or ſmall Ship, was lately contrived, wherein

[f] See *Vol.* I. *p.* 291. and *Vol.* III. *p.* 168, 169, *&c.*

[g] See the Article *Maturation*, in the *Sylva Sylvarum*.

[h] See Dr. *Halley*'s Account of the Diving-Bell, in the *Philoſophical Tranſactions*, N° 349. See alſo *Vol.* III. *p.* 566.

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wherein Men may row under Water, for ſome Diſtance[g]. However this be, under ſuch a Veſſel as we juſt now deſcribed, Bodies may be eaſily ſuſpended in Air, at the bottom of the Sea.

A new Uſe of cloſe Operation.

314. There is alſo another Uſe of carefully including, and ſhutting up, Bodies in Veſſels; *viz.* not only to keep out the external Air, but alſo to keep in the Spirit of the Body, operated upon internally; for 'tis neceſſary the Operator upon natural Bodies ſhould be certain of his Quantities; or that nothing ſhould expire or go off: for 'tis then that deep or great Alterations are made in Bodies, when, as Nature prohibits Annihilation, Art alſo prevents Loſs, or the Eſcape of any Part of the Subject.

An Objection to it removed.

315. But a falſe Notion has here prevailed, which, if it were true, the Preſervation of the entire Quantity of a Body, without Diminution, might be in a manner deſpaired of. The Notion is this, that the Spirits of Bodies, and Air highly rarified by Heat, can be contained by no Veſſels; but conſtantly eſcapes through their Pores. Men have been perſuaded to this Opinion, by thoſe common Experiments; (1.) of inverting a Glaſs, with a piece of lighted Paper, or Candle in it, into Water, whence the Water riſes upwards; and, (2.) of Cupping-Glaſſes, which being heated with Flame, attract the Fleſh. For Men have imagined in both Caſes, that the Air is attenuated, diſcharged, and leſſened in Quantity; whence the Water, or Fleſh, ſucceeds by the Motion of Connection[h].

316. But this is erroneous; for the Air is not here leſſened in Quantity, but contracted in Space: nor does the Water riſe before the Flame is extinguiſhed; or the Air grown cold; inſomuch that Phyſicians, to make the Cupping-Glaſſes draw the better, clap Sponges upon them, dipt in cold Water[i]. Therefore Men need not be ſo apprehenſive, that Air, or Spirits, ſhould eaſily eſcape this Way[k]: for tho' it be true, that the moſt ſolid Bodies have their Pores; yet Air or Spirit, will not eaſily be ſubtilized to ſuch a Degree: as neither will Water paſs thro' a very ſmall Crack[l].

The ſecond Means of Practice; viz. Violence.

317. As to the ſecond Means of *Practice*; viz. by *compreſſing*, *extending*, *agitating*, &c. 'tis principally to be obſerved, that Compreſſions and ſuch kinds of Violence, are of very great Force in local Motions, and the like; as in Machines and Projectiles; even ſo as to deſtroy organical Bodies, and their Virtues or Powers, which plainly conſiſt in

[g] An Invention of this Kind is uſually attributed to *Cornelius Drebbel*, who is ſaid to have had a volatile Liquor for reſtoring the Air to its priſtine Temper, after having been ſpoiled by Reſpiration. 'Tis farther ſaid, that this Effect was produced barely by unſtopping the Glaſs, wherein the Liquor was contained. But of this Matter there ſeems to be nothing known with Certainty; or at beſt, not with the requiſite Particularity.

[h] See above, §. 244.

[i] The later manner of explaining this Phænomenon by the Rariſaction of the internal Air, and the Preſſure of the external, will not here alter the Caſe; becauſe the Air, upon this Suppoſition, does not paſs thro' the Glaſs.

[k] See *Vol.* III. *p.* 614.

[l] See more to this Purpoſe in *Vol.* III. *p.* 512. 613.

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Motion: for as all Life, all Flame and Ignition, are deſtroy'd by Compreſſion; ſo is every Machine ſpoiled, and its Parts confounded, or deſtroy'd, by the ſame. They are alſo of Force to deſtroy the Virtues conſiſting in Arrangement, or Poſition, and a ſomewhat groſſer Diſſimilarity of Parts; as in Colours: for the Colour of a Flower, when whole, differs from its Colour, when bruiſed; and ſo the Colour of Amber when whole, differs from the Colour of Amber, when bruiſed. So again, with regard to Taſtes; the Taſte of an unripe Fruit is not the ſame as when ripe, or after having been ſqueezed and preſs'd; but manifeſtly ſweeter. Theſe Violences, however, have no great Power over the more noble Transformations, and Alterations of ſimilar Bodies; becauſe Bodies, by their means do not acquire any new, permanent, and quieſcent State; but one that is tranſitory, and always endeavouring to reſtore and free itſelf.

Whether Bodies may be permanently condenſed, or rarified by Force.

318. But it might be proper to make ſome careful Experiments to ſhew, whether the Condenſation of a ſimilar Body, as Water, Oil, *&c.*[o] or a Rarifaction violently introduced, may become conſtant and fixed; ſo as to change, as it were, the Nature of the Subject: and it ſhould firſt be tried by bare Continuance, and afterwards by Helps, and Conſents. This would be eaſier to do in the Experiment formerly mentioned for attempting the Condenſation of Water, included in a Lead Veſſel, and wrought by the Hammer, and the Preſs[p]; in which Caſe, the metalline Globe, when beat flat, ſhould be left in that State, for ſome Days before the Water was taken out; in order to ſee whether it would immediately fill the ſame Dimenſions it had before the Operation: for if it did not, either immediately, or ſoon after, the Condenſation might ſeem to have been permanent; or otherwiſe, if the Water reſtored itſelf, the Compreſſion would appear to have been only tranſitory.

An Experiment recommended for condenſing Water.

Another for rariſying Air.

319. And ſomething of the ſame kind might be tried, as to the Extenſion and Rarifaction of the Air, in Glaſs-Eggs, after the manner formerly mentioned[q]: when, the Air being ſtrongly extracted by Suction out of the Glaſſes, and the Orifices ſuddenly cloſed, and well ſecured; the Glaſſes are to remain thus for ſome Days; and afterwards to be opened, to ſee whether the external Air would be attracted with a hiſſing Noiſe in at the Orifices of the Glaſſes; or, if being opened under Water, the ſame Quantity of Water would be drawn in, as if they had been directly plunged into Water at firſt, after the Air was ſucked out.

Such Condenſations and Rarifactions probable.

320. It is probable, (or at leaſt deſerves to be proved) that ſuch Condenſations and Rarifactions may be made; becauſe Continuance of Time has the like Effect in Bodies a little more Diſſimilar: thus, for Example,

[o] See an Experiment of this Kind performed upon Air, in Mr. *Hauksbee's Phyſico-Mechanical Experiments*, p. 162---166.

[p] See above, *Aph.* 45. §. 222.

[q] See above, *Aph.* 45. §. 220.

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Example, a Stick being bent by Compreſſion, for ſome time, does not come ſtrait again. And this cannot be attributed to any Loſs in the Quantity of the Wood, by the Continuance; becauſe the ſame thing happens alſo in a Plate of Iron, which is not exhalable. But tho' the Experiment ſhould not ſucceed by bare Continuance, ſtill the Buſineſs is not to be deſerted; but other Aſſiſtances uſed[r]: for 'tis no ſmall Acquiſition, if fixed and conſtant Natures may be given to Bodies by Violence; for thus Air might be converted into Water, by Condenſation; and many Things of the like Kind be performable: for Man has a greater Command over violent Motions than he has over the reſt[s].

The third Means of Practice.

321. The *third* Means of Practice regards that grand Engine, or Inſtrument, both of Nature and Art; *viz.* *Heat* and *Cold*. And here the human Power ſeems perfectly Lame on one Side; for we have the Heat of Fire infinitely ſtronger, or more intenſe, than that of the Sun, as it naturally comes to us; or than the Heat of Animals: but Cold is wanting; unleſs ſo far as it may be procured by the Severity of Winter; by Caverns; or, by the Application of Snow and Ice[t]: which, in the way of Compariſon, may about equal the Degree of Heat, afforded by the Noon-day Sun, in ſome Parts of the torrid Zone; increas'd by the Reverberation of Mountains and Walls: for ſuch a Degree of Heat and Cold, may, for a ſmall time, be endured by Animals: but this is nothing to the Heat of a Melting-Furnace, or to a Degree of Cold, that anſwers to ſuch a Degree of Heat. And therefore all Things, with us, tend but to Rarifaction, Deſiccation, and Conſumption; and ſcarce any to Condenſation, and Inteneration, or Suppleneſs, unleſs by Mixture, and, as it were, by ſpurious Means. Wherefore *Inſtances of Cold* are with great Diligence to be ſought after; ſuch as may perhaps be found by expoſing Bodies, at great Heights, in ſharp Froſts; laying them in ſubterraneal Caves; ſurrounding them with Snow and Ice, in deep Places, or Reſervatories made for the Purpoſe; by letting Bodies down into Wells; burying them in Quickſilver, and Metals; plunging them in the Waters which petrify Wood[u]; burying them in the Ground, (as they relate of the Matter for making Porcellane) and the like. So likewiſe, the Condenſations naturally made by Cold are to be ſought, that their Cauſes being diſcovered, ſuch Condenſations may be transferred into Arts. Such natural Condenſations we ſee in the ſweating of Marble and Stone; in the Dew condenſed on the inſide of Glaſs Windows, after a froſty Night; in the

The increaſing of Cold recommended.

[r] Such as large and ſtrong Condenſing Veſſels, and Syringes, for compreſſing and confining the Air.

[s] The Experiments of this Kind ſeem to have been no way duly proſecuted. The Succeſs which Mr. *Haukſbee* met with, in a ſlight Attempt to deſtroy the Spring of common Air, might very well encourage the Uſe of greater Violence, ſtronger Veſſels, and a greater Length of Time, for the Purpoſe. See his *Phyſico-Mechanical Experiments*, p. 162, *&c.*

[t] See the *Sylva Sylvarum*, under the Article *Cold*.

[u] For producing the greateſt Degrees of artificial Cold, by freezing Mixtures, ſee Mr. *Boyle's Hiſtory of Cold*; and the Chapter of *Fire*, in Dr. *Boerhaave's Chemiſtry*.

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Condenſation of Vapours into Water within the Earth, whence Springs frequently ariſe; and other Examples of this Kind.

Bodies potentially cold.

322. But beſides thoſe Things which are cold to the Touch, there are certain others potentially cold; which alſo condenſe: tho' they ſeem to operate only upon Animal Bodies, and ſcarce upon others. And of this Kind are many Things in Medicine; for ſome Remedies condenſe the Fleſh and tangible Parts, ſuch as Aſtringents and Thickners; and others condenſe the Spirits, as appears chiefly in Narcoticks [w].

Two Ways of condenſing the Spirit, by Narcoticks.

323. There are two Ways of condenſing the Spirits by ſoporiferous Medicines; the one, by appeaſing the Motion of the Spirits; and the other by diſpelling, or putting them to Flight. Thus Violets, Roſes, Lettuces, and the like mild and gentle Things, by their friendly and moderately cooling Vapours, invite the Spirits to unite, and reſtrain their brisk and reſtleſs Motion; but the ſtronger Opiates, by a malignant and unfriendly Quality, put the Spirits to flight; and therefore, if theſe are applied externally, the Spirits preſently retire from the Part; and willingly enter into it no longer: but if taken internally, their Fumes aſcending to the Head, every way chaſe away the Spirits, contained in the Ventricles of the Brain: and when the Spirits thus retreat, and are unable to fly into any other Part, they conſequently come together, and are thus condenſed; or, ſometimes quite extinguiſh'd, or ſuffocated: tho' the ſame Opiates taken in Moderation, have the Virtue, by a ſecondary Accident, (or by that Condenſation, which ſucceeds upon the coming together of the Spirits) of ſupporting, and fortifying the Spirits, and checking their uſeleſs and incentive Motions; whence ſuch Opiates become of good Service in the Cure of Diſeaſes, and the prolonging of Life [x].

The Preparatives to Cold.

324. The Preparations of Bodies, likewiſe, for the Admiſſion or Reception of Cold, cannot be omitted. Thus it is thought that a little warming of Water, haſtens its freezing by Cold, more than if the Water was not warmed at all. And the Inſtances of this Kind are to be collected [y].

The Ways of Condenſing without Cold, to be enquired after.

325. But as Nature ſupplies Cold ſo ſparingly, we ſhould here imitate the Apothecaries, (who when a Simple cannot be procured, ſubſtitute one thing for another) and carefully ſearch out the Subſtitutes or Succedaneums for Cold; that is, we ſhould enquire how Condenſations may be made in Bodies, without Cold, whoſe proper Office it is to effect them.

Are of four Kinds.

326. And theſe Condenſations ſeem to be of four Kinds; the *firſt* whereof depends upon bare *Contruſion*; which becauſe of the Reſiſtance, or Recoiling of Bodies, has but little Force in cauſing a permanent Denſity; tho' it may do ſomewhat as an Auxiliary. The *ſecond* is made by the *Contraction* of the groſſer Parts of a Body, after the Avolation, or Exit, of

3 the

[w] See the *Hiſtory of Life and Death*, Vol. III. p. 376.
[x] See the *Hiſtory of Life and Death*, paſſim.
[y] See Mr. *Boyle*'s *Hiſtory of Cold*.

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the finer; as happens in Indurations by the Fire, and the repeated quenching of Metals, *&c.* The *third* is made by the *Approach, or coming together, of the more ſolid, or ponderous, homogeneous Parts* of a Body, which before were ſeparated and mixed among the leſs ſolid; as in recovering the Quickſilver from Mercury-Sublimate, which in Powder poſſeſſes much more Space than ſimple Mercury: and ſo again, in purging and ſeparating of Metals from their Droſs. The *fourth* is made by *Conſent*, or applying ſuch Things as condenſe by a ſecret Virtue in Bodies; tho' theſe Conſents have hitherto ſeldom appeared; which is no wonder, becauſe till ſome Progreſs is made in the *Diſcovery of the Forms and Structures of Things*, there can be but ſlender Hopes of Advantage ariſing from the Enquiry into the Conſents of Bodies [z].

Condenſation by Conſent in Animals.

327. But with regard to the Bodies of Animals, there are doubtleſs many Remedies, both internal and external, which condenſe, as it were by Conſent; according to what was juſt now obſerved: but this Kind of Operation is rare in inanimate Bodies [a]. There goes a Report, as well in Writing as Diſcourſe, of a Tree in one of the *Tercera Iſlands*, that perpetually diſtils Water, ſo as to be of ſome Convenience to the Inhabitants [b]: and *Paracelſus* ſays, there is a Plant called *Roſa Solis*, or *Ros Solis*, that remains full of Dew in the Noon-day Heat; when all other Herbs are dry [c]. And if theſe *Inſtances* are true, they might prove of noble Uſe, and very worthy of farther Examination. But for thoſe Honey-Dews, which, like Manna, are found upon Oak-Leaves in the Month of *May*; we judge they are not made, or condenſed, by any Conſent, or Peculiarity in the Oak-Leaf; but that they fall upon other Leaves alſo, and are only catched and detained upon the Leaves of the Oak, becauſe theſe are cloſer, and not ſo ſpongy as moſt other Leaves [d].

The Uſes to be made of Heat:

328. As to Heat, Men have a large Supply, and a great Command thereof; tho' ſome of its moſt neceſſary Particulars ſtill remain to be obſerved, and enquired into, notwithſtanding the Boaſts of the *Chemiſts*. For tho' the Works of intenſe Heat are much ſought after and admired; yet the Effects of a ſlow Heat, (which are chiefly thoſe produced by Nature,) remain unexperienced and concealed. Hence we ſee, by the violent Heats now commonly uſed, the Spirits of Bodies are greatly exalted; as in mineral acid Spirits, and certain chemical Oils; but the tangible Parts are harden'd, and ſometimes fixed; with the Loſs of the volatile ones. And thus the homogeneous Parts are ſeparated, and the heterogeneous groſsly incorporated and mix'd together; whilſt the Structure, and more ſubtile Texture of compound Bodies, is, by this means, confounded and deſtroy'd: ſo that the Effects of a milder Heat ought, by

The gentle Heats recommended.

[z] Becauſe ſuch Conſents, or particular Agreements, depend thereon. See below, §. 335.
[a] See the *Hiſtory of Condenſation and Rarifaction*, paſſim.
[b] See *Vol.* III. *p.* 563. See alſo Dr. *Sprat*'s *Hiſtory of the Royal Society*.
[c] See the *Sylva Sylvarum*, Vol. III. p. 260.
[d] See the *Sylva Sylvarum*, p. 261.

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by all means, to be try'd and diſcover'd: whence much more ſubtile Mixtures, and regular Textures, or Structures of Bodies, might be procured in Imitation of Nature, and the Works of the Sun; according to what we intimated above [e]. For the Operations of Nature are perform'd by much ſlower Degrees, or much ſmaller Steps and Portions at a time, and by more exquiſite and various Poſitions, or Arrangements, than the Works of Fire, as it is now employ'd. *And 'tis then that the human Power may ſeem truly enlarged, when, by Heats and artificial Ways, the Works of Nature may be exactly imitated, or expreſs'd in Appearance, perfected in Virtue, and varied in Number*; to which we may alſo add, *accelerated in Time* [f]. Thus the Ruſt of Iron is a long while in making; but expeditiouſly obtained in the artificial *Crocus Martis*. And the ſame is to be underſtood of Verdigreaſe and Ceruſe. Cryſtal is produced by a long Proceſs; but Glaſs by a ſhort one: Stones grow ſlow; but Bricks are preſently made.

Art operates quicker than Nature.

The ſeveral Diverſities of Heat to be tried.

329. And all the Diverſities of Heat, with their different Effects, are, with Diligence and Induſtry, to be ſought out and collected from all Quarters; *viz.* (1.) thoſe of the heavenly Bodies, by their direct Rays; and as they are reflected, refracted, and united by Burning-Glaſſes [g]: (2.) thoſe of Lightning, Flame, and Coal-Fires: (3.) Fires of different Materials: (4.) open Fires, cloſe Fires, ſtraiten'd and ſtreaming Fires; or Fires modified by all the various Structures of Furnaces: (5.) Fire animated by the Blaſt: (6.) Fire left to itſelf, and unexcited: (7.) Fire removed to a greater or leſs Diſtance: (8.) Fire acting thro' different Mediums: (9.) moiſt Heats, as thoſe of the *Balneum Mariæ*, and the Dunghill; external and internal animal Heats; compreſs'd Hay, *&c*: (10.) dry Heats; as of Aſhes, Lime, Sand; and, in ſhort, Heats of all Kinds, with their various Degrees [h].

Small, irregular, ſtated Heats recommended.

330. Above all, the Enquiry and Diſcovery of the Effects and Productions of Heat, continued and remitted gradually, regularly, and periodically, at due Diſtances, and with due Continuance, ſhould be attempted: for this ſtated Inequality is a true Offspring of the Heavens, and the *Mother of Generation*. Nor is any thing extremely great and commanding to be expected from a vehement, haſty, and ſubſultory Heat. This appears plainly in Vegetables; and again in the Wombs of Animals, where there is a great Inequality of Heat, from the Motion, the Sleep, the Food, and the Paſſions of the Female in Geſtation: and, laſtly, the ſame Inequality takes Place in the Matrices of the Earth, where Metals and Minerals are formed.

331. This

[e] See *Aph.* 35.

[f] See the *Sylva Sylvarum*, Vol. III. p. 32.

[g] See the Experiments made, with the Duke of *Orleans*'s Burning Lens, by *M. Homberg*; *Memoir. de l'Acad. Roy.* An. 1702. See alſo the *Philoſophical Tranſactions*, and *German Ephemerides*, to the ſame Purpoſe.

[h] See the Author's *New Atlantis*, Vol. I. p. 295. See alſo the *Sylva Sylvarum*, Vol. III. *p.* 92—96.

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331. This renders the Unskilfulness of some modern Alchemists the more remarkable; who expect to obtain their End by means of an *Athanor*, or the equable Heats of Lamps, &c. kept burning, in one constant manner [i]. And so much, at present, for the Works and Effects of Heat. Nor is it yet the Season to examine these Particulars thoroughly, before the *Forms* and Textures of Bodies shall have been farther discovered and brought to Light: for 'tis then that Instruments are to be sought out, applied, and adapted; when the Examples, Views and Designs are fixed and determined.

The Inadvertence of the Alchemists, in using a constant Heat.

332. The *fourth* Means of Practice, *viz. Continuance*, is the Provider and Dispenser of Nature. We call that *Continuance*, when a Body is left for a considerable Time to itself, guarded and defended from all external Force; in which State the intestine Motions discover, and finish, or perfect their own Course; whilst the extraneous and adventitious Motions are excluded: for the Works of Time are much more subtile, than the Works of Fire [k]. Wine can no way be so well clarified by the Fire, as by Time; nor are the Incinerations made by Fire so exquisite as the Resolutions, Consumptions, and Decays of Time. The sudden and precipitate Incorporations and Mixtures made by Fire, are far inferior to those made by Time. And the different and various Textures, which Bodies endeavour at by *Continuance*, as in the Case of Putrefactions, are destroy'd by Fire, or a violent Heat [l].

The fourth Means of Practice; viz. Continuance.

333. It may be here proper to observe, that the Motions of Bodies perfectly included, or close confined in Vessels, suffer something of Violence; as this Imprisonment hinders the spontaneous Motions of the Body: and therefore *Continuance* in an open Vessel, conduces more to Separation; but in a Vessel perfectly closed, to Commixture, or Combination; and in a Vessel imperfectly closed, without excluding the Air, to Putrefaction [m]: and in all these Cases, *Instances of the Works and Effects of Continuance* are to diligently collected from all Quarters.

The Motions of confined Bodies suffer Violence.

334. The *fifth Means* of operating, *viz.* by *Government and Regulation of Motion*, is extremely powerful. We call that the Government and Regulation of Motion, when one Body, by meeting another, hinders, repels, or directs its spontaneous Motion. And this generally consists in the Figure and Position, or Situation of the Vessels: thus the Figure of an erect Cone forwards the Condensation of Vapours, in Alembics; but an inverted Cone promotes the purging of Sugar, or the Discharge of the Treacle into the Receivers [n]. Sometimes also Curvature,

The fifth Means of operating; viz. by Regulating Motion.

[i] See the *Sylva Sylvarum*, under the Article *Gold*.
[k] See the *Sylva Sylvarum*, under the Articles *Heat*, *Preservation*, and *Putrefaction*.
[l] See the *Sylva Sylvarum*, passim.
[m] See the Article *Putrefaction*, in the *Sylva Sylvarum*.
[n] And hence the Figures, or Make of all the chemical, or other Vessels, may be easily determined. See *Boerhaave*'s Chemistry, under the Chapter of *Vessels*.

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vature, or Flexure, Straitneſs, and Dilatation, are required by Turns, and the like. And all Percolation depends upon this, that whilſt the oppoſing Body opens to one Part of the Liquor, it cloſes upon or ſtops another [o]. Nor is the Buſineſs of Percolation, or other Regulation of Motion, always carried on by external Means; but alſo by internal, or by Means of one Body within another: as when Stones are put into Water to collect its Sediment, or earthy Parts; or when Syrups are clarified with the Whites of Eggs, whereto the groſſer Fæculences adhere, and may be afterwards ſeparated [p]. And to this Regulation and Direction of Motion, *Teleſius*, from a ſlight and ſuperficial Conſideration, attributes the Figures of Animals; as if they were moulded, and took the Impreſſion of the veiny, wrinkled, and hollow'd Sides of the Matrix. For he ought to have conſider'd, that tho' Eggs alſo are formed in the *Uterus*, after the ſame manner as the *Fœtus*; yet no Wrinkles or Inequalities appear on their Shells. But it is true, indeed, that the Regulation of Motion produces Figure in Moulding and Caſt-Work.

The ſixth Means of Practice, viz. *Conſent.*

335. The *ſixth Means* of Practice conſiſts in operating by Conſents, or Avoidances, which frequently lie deep concealed: for thoſe uſually call'd occult, and *ſpecific Properties*, and Sympathies and Antipathies, are in great meaſure the Corruptions of Philoſophy. Nor can we have any ſolid Hopes of diſcovering the Conſents of Things, before the Diſcovery of *Forms*, and ſimple Textures: for Conſent is no more than the Sympathy or Correſpondence of *Forms* and *Textures* to each other [q].

The more univerſal Conſents of Things. Their Differences.

336. But the greater, and more univerſal, Conſents of Things, are not abſolutely obſcure. We will, therefore, begin with theſe. The *firſt* and principal Diverſity of Things, is this; that ſome Bodies differ greatly in their Quantity, and Rarity of Matter; yet agree in Texture: whilſt others agree in Quantity and Rarity of Matter; but differ in Texture. For it is well obſerved, that the two chemical *Principles*, *Sulphur* and *Mercury*, run, as it were, thro' the Univerſe of Things [r]. And, doubtleſs, there appears to be a certain *Conſent* of Nature, or an Agreement of Bodies, in theſe two Principles, from a Conſideration of the moſt univerſal *Phænomena*. Thus there is an Agreement betwixt Brimſtone, Oil, unctuous Exhalations, Flame, and perhaps the Body of the Stars: and, again, between Quickſilver, Water, and aqueous Vapours, Air, and perhaps the pure interſtellar Æther. But theſe two larger Sets, or Tribes, of Things, differ prodigiouſly from each other, in Quantity of Matter and Denſity; tho' they greatly agree in Texture; as appears in numerous Inſtances. But, on the other hand, the different Metals have a great Agreement in Quantity of Matter, and Denſity;

Sulphur and Mercury, two Tribes of Things.

[o] See the Articles *Clarification* and *Percolation*, in the *Sylva Sylvarum*.
[p] See *Vol.* III. *p.* 49, *&c.*
[q] See above, §. 326.
[r] See the *Sylva Sylvarum*, under the Article, *Principles of Chemiſtry*.

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Denſity; eſpecially in reſpect of Vegetables; *&c.* but differ greatly in Texture: whilſt Vegetables and Animals have an infinite Variety of Texture; yet differ not conſiderably in Quantity of Matter, or Denſity [s].

337. The next moſt *general Conſent*, is that betwixt primary, or perfect Bodies, and their foſtering Matters, that is their Solvents and Aliments. It muſt therefore be examined, in what Climate, in what Earth, or Glebe, and at what Depth, all the Metals are generated [t]; and ſo of Gems, whether thoſe of the Rock, or produced in Mines [u]: in what Glebe, or Earth, all Trees, Shrubs and Plants, principally grow, and delight; likewiſe what Amendments, or Kinds of Compoſts, whether of Chalk, Sea-ſand, Aſhes, *&c.* ſucceed the beſt [w]; and which of them are fitteſt, and moſt ſerviceable, according to the difference of the Land. So again, the Grafting and Inoculating of Trees, and Plants; with the Methods thereof: for the moſt ſucceſsful Ingrafting has a great Dependance upon Conſent, betwixt the Trees ingrafted. In which reſpect, it is an agreeable Experiment, which we are informed was lately tried, of the ingrafting of Field-Trees; which has hitherto been practiſed only in thoſe of the Garden: whence the Leaves and Maſt of the former have been obtained much larger, and the Trees render'd more ſhady [x]. In like manner, the *Aliments of Animals* muſt be reſpectively noted, in general; together with their Negatives [y]: for carnivorous Animals cannot be fed with Herbage. Whence, (tho' the Will in Men has a greater Influence over their Bodies, than in other Animals,) the Order of the *Folietani*, or Leaf-Eaters, is ſaid to have dropp'd, after Trial, upon finding that Leaves were not capable of nouriſhing the human Body [z]. Again, the different Matters of Putrefactions, whence little living Creatures are bred, ſhould be likewiſe regarded [a]. *The Conſent betwixt Bodies, and their Aliment.*

338. The Conſents betwixt perfect Bodies, and their Subordinates, as exemplified above, are ſufficiently manifeſt; whereto may be added the *Conſents* betwixt the *Senſes* and their *Objects:* And as theſe latter Conſents are exceeding evident, well obſerved, and thoroughly diſcuſs'd; they may afford great Light to other *Conſents* that are hitherto latent [b]. *The Conſent betwixt the Senſes, and their Objects.*

339. But the *internal Conſents* and *Avoidances of Bodies*, or their Affections and Diſagreements, vulgarly, and often ſuperſtitiouſly, call'd by the Name of *Sympathies* and *Antipathies* (whence we unwillingly uſe the Expreſſion) are exceeding rare; as being either falſely attributed to *Sympathies and Antipathies.*

[s] See the *Hiſtory of Condenſation and Rarifaction*, Vol. III. p. 512, 513, *&c.*
[t] See *Becher's Phyſica Subterranea.*
[u] See Mr. *Boyle's* Piece of the *Origin and Virtues of Gems.*
[w] See *Vol.* III. *p.* 244, 281, *&c.*
[x] See the *Sylva Sylvarum*, under the Article *Vegetables* and *Vegetation.*
[y] As in diſcovering the *Form of Heat.* See the *Tables, Aph.* 12, *&c.*
[z] See the *Sylva Sylvarum*, Vol. III. p. 77.
[a] See the *Sylva Sylvarum*, paſſim.
[b] See the *Sylva Sylvarum*, under the Articles *Imagination, Senſes, Sound, Sympathy*, &c.

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Things; mix'd with Fables; or overlook'd and neglected. Thus there is ſaid to be an Enmity between the Vine and the Colewort [c]; becauſe they thrive not well, when planted near each other: whereas the Reaſon is, that both of them are ſucculent, and powerfully attract the Moiſture of the Earth; whence they mutually defraud each other. So there is ſaid to be a Conſent, and Friendſhip, betwixt Corn and the red Poppy; becauſe they both grow only in plough'd Ground: whereas there rather ſeems to be an Enmity between them; becauſe the Poppy grows from ſuch a Juice of the Earth, as was left and rejected by the Corn; ſo that the ſowing of Corn prepares the Ground to yield Poppies. And there is a great Number of theſe falſe Reaſons, and fictitious Solutions of Conſents, or Sympathies, prevailing. But Fables are here to be abſolutely rejected: whence there will remain but a ſlender Stock of ſuch *Conſents* as are approved, by certain Experience; like thoſe, between Iron and the Loadſtone; Gold and Quickſilver, *&c.* tho' there are ſome others alſo found worthy of Obſervation, in chemical Experiments upon Metals [d]. But the moſt are to be obſerved in certain Medicines, which, by ſecret and ſpecific Properties, regard either certain Parts, or Humours of the Body, or certain Diſeaſes, and ſometimes individual Natures [e].

To be duly collected.

The Conſents of the Moon.

340. Nor are the *Conſents* between the Motions and Changes of the Moon, and the Affections and Paſſions of the inferior Bodies, to be omitted; ſo far as they may be obſerved, and collected, from the Experiments of Agriculture, Navigation, and Medicine, or otherwiſe, with the requiſite Severity, and Juſtneſs of Choice and Judgment [f]. And the leſs common all the *Inſtances of ſecret Conſents* are, with the greater Diligence they ought to be enquired into, upon the Footing of faithful Hiſtory and juſt Relation; provided this be done without Levity, or Credulity, and with a proper Degree of Doubt, Suſpenſion, and Tradition [g].

A Diſpoſition or Indiſpoſition to Union, by Appoſition.

341. There is ſtill another *Conſent* of Bodies, in the way of operating, which, tho' it ſeems inartificial, is yet of excellent and various Uſe, and ought therefore to be enquired into by the Means of careful Obſervation; *viz.* a Diſpoſition, or Indiſpoſition, to unite by ſimple Compoſition, or Appoſition: for ſome Bodies eaſily and readily mix and incorporate; but others with Difficulty, and unwillingly. Thus Powders mix beſt with Waters; but Calxes and Aſhes with Oils, *&c.* And not only the *Inſtances* of the Propenſity or Averſeneſs of Bodies to mix, are to be collected; but likewiſe the Inſtances of the Arrangement of

[c] See *Vol.* III. *p.* 258.
[d] See *Becher's Phyſica Subterranea.*
[e] See Mr. *Boyle* of *Specific Remedies.*
[f] See the *Sylva Sylvarum*, and *Hiſtory of Winds*, paſſim.
[g] See the *Sylva Sylvarum*, under the Articles *Imagination*, *Sympathy*, &c.

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Parts; their Diſtribution and Digeſtion upon Mixture; and, laſtly, thoſe of Predominancy after the Union is made [h].

342. The *ſeventh* and laſt Method, or *Means of Practice*, is to operate by *changing, and variouſly combining the former ſix.* But till each of thoſe ſhall have been farther enquired into, it will not be ſeaſonable to offer any Examples of this Method. The Series, or Chain, of this Kind of Alternation, or different Combination of Ways, as it may be accommodated to the Production of particular Effects, is, indeed, exceeding difficult to be underſtood; tho' extremely powerful in the effecting of Works. But Mankind labour under the utmoſt Impatience, with regard to this Kind of *Enquiry* and *Practice* [i]; tho' it be like a *Clue to the Labyrinth of great Works* [k]. And thus much by the way of illuſtrating *Sovereign Inſtances.* *The laſt Means of Practice; viz. by variouſly combining the former ſix.*

APHORISM LI.

343. In the *twenty-ſeventh*, and laſt Place, among our *Prerogative Inſtances*, come *Magical Inſtances*; by which we underſtand ſuch wherein the Matter, or Efficient, is but ſmall, compared with the Greatneſs of the Work, or Effect, produced: ſo that tho' theſe *Inſtances* were common, they would ſtill be almoſt miraculous; ſome of them at firſt Sight, and others even when attentively conſidered. Nature, indeed, of herſelf, affords theſe ſparingly; but what ſhe may do, when farther ſearched and entered into; and after the *Diſcovery of Forms*, latent *Proceſſes* and concealed *Structures*; will appear to Poſterity [l]. (27.) *Magical Inſtances.*

344. Theſe *Magical Effects*, ſo far as we can hitherto conjecture, are produced three Ways; *viz.* (1.) by *Self-Multiplication*, as in Fire, and thoſe Poiſons, called Specific; as alſo in Motions, which paſs and increaſe, as they go, from Wheel to Wheel; (2.) by *Excitation*, or *Invitation*, in another Body; as the Loadſtone animates numberleſs Needles, without Loſs, or Diminution of its Virtue: and we find the ſame kind of Virtue in Yeaſt, *&c.* (3.) by the *Preoccupation of Motion*, as we above obſerved in Gunpowder, Guns, and Mines [m]. *Magical Effects, how produced.*

345. The two former of theſe Methods require the *Diſcovery of Conſents*; and the third, the *Meaſure of Motions.* But whether there be any *Their Requiſites.*

[h] It deſerves to be attentively conſider'd, how ready and commodious a Thing *Practice* would prove, if all the Aſſiſtances here pointed out, were procured; and employ'd, as they might be, according to the Deſign of this *Piece.*

[i] That is, they have not Patience to go through the *Enquiry*, which alone directly leads up to *Practice*: Or they prepoſterouſly deſire to obtain the End, without enduring the Means.

[k] The Reader may have ſome tolerable Notion of the Thing here meant, by carefully reading over the Author's *Hiſtories of Life and Death*; of *Winds*, and of *Condenſation and Rarifaction*; and underſtanding to what Diſcoveries they lead; or what the Tendency is of the whole *Inſtauration*; for which, ſee *Vol.* I. *p.* 10---16.

[l] Little Progreſs has been hitherto made in this *medullary Part of Phyſics*; for Men have frequently miſtaken, or wilfully deſerted, the Road that leads to it; tho' this was not only pointed out, but entered by the Author; as appears remarkably in his *Sylva Sylvarum*; *Hiſtory of Life and Death*; *Hiſtory of Winds*, &c.

[m] *Aph.* 36.

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Method of changing Bodies in their ſmalleſt Parts, and tranſpoſing the more ſubtile Textures, or Structures, of Matters (which is a Thing that regards all Kinds of Transformations in Bodies; ſo that Art might thus quickly effect, what Nature is a long while in bringing about. We have hitherto no certain Indications[a]. For as in Things that are ſolid, true and uſeful, we aſpire to the ultimate, or higheſt Perfection; ſo we perpetually deſpiſe, and to the utmoſt of our Power, diſcard and reject ſuch as are vain, tumid and empty. And ſo much for the Subject of *Prerogative Inſtances.*

Aphorism LII.

The Novum Organum, *not a Philoſophy, but a Logick.*

346. It muſt be obſerved, that in this our *new Machine* for the *Underſtanding*, we deliver a *Logick*, not a *Philoſophy:* but as *our Logick* directs the Underſtanding, and inſtructs it, not like the common Logick, to catch and lay hold of abſtracted Notions, as it were by the ſlender Twigs, or Tendrels, of the Mind; but really enters, and cuts through Nature, and diſcovers the Virtues and Actions of Bodies, together with their Laws, as determined in Matter; ſo that this Knowledge flows not only from the Nature of the Mind, but alſo from the Nature of Things, and the Univerſe; hence it is no wonder, that in order to give *Examples and Illuſtrations of our Art*, we every where employ phyſical Conſiderations and Experiments.

Recapitulation of the Doctrine of Prerogative Inſtances.

347. We have here laid down *twenty-ſeven Prerogative Inſtances*, viz. (1.) *Solitary Inſtances*; (2.) *Travelling Inſtances*; (3.) *Glaring Inſtances*; (4.) *Clandeſtine Inſtances*; (5.) *Conſtituent Inſtances*; (6.) *Conformable Inſtances*; (7.) *Singular Inſtances*; (8.) *Deviating Inſtances*; (9.) *Frontier Inſtances*; (10.) *Inſtances of Power*; (11.) *Accompanying* and *Hoſtile Inſtances*; (12.) *Subjunctive Inſtances*; (13.) *Inſtances of Alliance*; (14.) *Crucial Inſtances*; (15.) *Inſtances of Divorce*; (16.) *Inſtances of Entrance*; (17.) *Summoning Inſtances*; (18.) *Journying Inſtances*; (19.) *Supplemental Inſtances*; (20.) *Lancing Inſtances*; (21.) *Inſtances of the Staff*; (22.) *Inſtances of the Courſe*; (23.) *Doſes of Nature*; (24.) *Inſtances of Reluctance*; (25.) *Intimating Inſtances*; (26.) *Sovereign Inſtances*; and, (27.) *Magical Inſtances.*

Theſe Inſtances aſſiſt either the Senſe or Underſtanding.

And, in Point of *Information*, they aſſiſt either the *Senſe*, or the *Underſtanding:* the Senſe, as the five Inſtances of Light; and the Underſtanding, either by haſtening the *Excluſion of the Form*[o], as the *Solitary Inſtances*; or by contracting, and more nearly indicating, the *Affirmative of the Form*[p]; as the *Travelling*, *Glaring*, *Accompanying*, and *Subjunctive Inſtances*; or by raiſing the Underſtanding, and leading it to Kinds, and common Natures; and that either immediately, as the *Clandeſtine*, and the *Singular Inſtances*,

[a] See *Vol.* I. *p.* 87---89.
[o] See the *Tables*, *Aph.* 11, 12, *&c.*
[p] See the *Tables*, *Aph.* 11, *&c.*

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Instances, and *Instances of Alliance*; or in the next Degree, as the *Constituent Instances*; or in the loweſt Degree; as the *Conformable Instances*; or again, by rectifying the Underſtanding, depraved by the Things whereto it is accuſtomed, as the *Deviating Inſtances*; or by conducting it to the great *Form*, or *Fabrick of the Univerſe*, as the *Frontier Inſtances*; or, laſtly, by guarding it againſt *falſe Forms*, and *Cauſes*, as the *Crucial Inſtances*, and *Inſtances of Divorce*.

348. And as to *Practice*; they either mark out, meaſure or facilitate it. They mark it out by ſhewing with what Particulars we are to begin, to prevent labouring in vain; as the *Inſtances of Power*; or to what we ſhould aſpire, if it be attainable; as the *Intimating Inſtances*: the four *Mathematical ones*, meaſure and limit it; and the *Sovereign* and *Magical ones*, facilitate it [q]. *Their Uſe to Practice.*

34. And of theſe *twenty-ſeven Inſtances*, a Collection of ſome ſhould be made at firſt; as was above obſerved [r]; without waiting till we come to *particular Enquiries*: and of this Kind are the *Conformable*, the *Singular*, the *Deviating*, and the *Frontier Inſtances*; the *Inſtances of Power*, and of *Entrance*, *Intimating*, *Sovereign*, *and Magical Inſtances*: becauſe theſe either aſſiſt and rectify the Underſtanding, or the Senſe; or afford Inſtruction with regard to Practice in general: and for the reſt, they are to be ſearched out when we make *Tables of View* [s] for the Buſineſs of the *Interpreter*, upon any particular Subject. For the *Inſtances* honoured and enobled with theſe Prerogatives, are like a Soul among *vulgar Inſtances of View*; and as we ſaid at the firſt [t], a few of them ſerve inſtead of many: and therefore when we make *Tables*, ſuch Inſtances are ſtudiouſly to be ſought out, and ſet down therein. The Doctrine of them was alſo neceſſary to what we deſign ſhall follow; and therefore a preparatory Account thereof was here requiſite. *How theſe ſeveral Inſtances are to be employ'd.*

350. And now we ſhould proceed to *the Helps, and Rectification, of Induction*, then to Concretes, latent Proceſſes, concealed Structures, *&c.* as *Concluſion.*

[q] If all this has not been clearly perceived in reading the foregoing *Doctrine of Prerogative Inſtances*, the whole may deſerve to be read over again, in the Light that is here afforded. And as a Foundation, let the *fourth Aphoriſm* of this *Second Part* be well underſtood. When the whole is conquer'd, it will appear, that this *Doctrine of Inſtances* is a very important Part of the *Novum Organum*; and makes the Buſineſs of Enquiry an almoſt mechanical Thing, level to every Capacity: for if the *Inſtances*, that is, *Particulars*, be collected upon any Subject, and thrown into Tables, in the manner here directed; they of themſelves exhibit a conciſe Hiſtory of the Subject; that leads up to its *Form*, or latent Proceſs. Hence this *Doctrine of Inſtances* is a kind of general *Direction*, or *Table*, for the due conducting and proſecuting of all Enquiries; ſo as at the ſame time to determine, limit, or almoſt graſp, the Form of the Nature enquired into, and lead directly to Practice. And in this View let the Author's particular Hiſtories be conſtantly read; as thoſe of *Life and Death*; *Winds*; *Condenſation and Rarifaction*; and ſeveral in the *Sylva Sylvarum*.

[r] See *Aph.* 32.

[s] See *Aph.* 11, *&c.*

[t] See *Aph.* 22.

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as mention'd in order, under the *twenty-firſt Aphoriſm*; that at length, like faithful Guardians, we might poſſeſs Mankind of their Fortunes, and releaſe and free the Underſtanding from its Minority: upon which an Amendment of the State and Condition of Mankind, and an Enlargement of their Power over Nature, muſt neceſſarily enſue. For by the Fall, Man at once forfeited his Innocency, and his Dominion over the Creatures; tho' both of them are, in ſome meaſure, recoverable, even in this Life: the former by *Religion* and *Faith*; and the latter by *Arts* and *Sciences*. For the World was not made abſolutely rebellious by the Curſe; but in Virtue of that Denunciation, *In the Sweat of thy Brow thou ſhalt eat thy Bread*, it is at length, not by Diſputes, or indolent magical Ceremonies [u], but by various real Labours, ſubdued, and brought, in ſome Degree, to afford the Neceſſaries of Life [w].

[u] Such as thoſe in the Sympathetic Philoſophy; the Magical Philoſophy of *Paracelſus*, &c.
[w] See *Vol.* III. *p.* 4, 5, 6.

APPENDIX

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APPENDIX

To the SECOND PART of the

INSTAURATION:

Containing some INTIMATIONS for perfecting the

NOVUM ORGANUM.

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APPENDIX

To the SECOND PART of the

INSTAURATION.

1. THE Author purpoſely left many Parts of his *New Engine* untouched, to go in queſt of proper Materials whereon to employ it; and, being prevented by Death, did not return from proſecuting the latter Deſign, to finiſh the former. Whence tho' the Parts that are treated, appear perfect, as Parts; yet the Whole of this grand *Engine* wants much of being compleated [a]. *The* Novum Organum *left unfiniſhed.*

2. The Contrivance itſelf has, by the greateſt Maſters in Science, been thought the beſt adapted, and moſt ſerviceable, of all thoſe at any time propoſed, for the Advancement of Philoſophy and Arts; ſo that to perfect and fit it for general Uſe, may deſerve more than ordinary Care and Concern. *The finiſhing of it, a Thing of Conſequence.*

3. And tho' to bring it ſo forward as we find it, was the Labour of a Maſter-Builder; tho' the Work, in its own Nature, is difficult, and, to vulgar Philoſophers, ſomewhat paradoxical; yet, perhaps, the Author has left ſuch Inſtructions concerning it, as may enable Workmen of a lower Claſs to finiſh it, and render the Method of uſing it generally intelligible: which ſeems rather to require ſedulous Application, than any extraordinary Learning, or uncommon Abilities. *The Author has left Directions about it.*

[a] See *Vol.* III. *p.* 5, 6.

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The Attempts of others in the ſame general Kind.

4. In order, therefore, to promote the finiſhing thereof, it may be proper to indicate the more conſiderable Attempts that have hitherto been made, with a View to ſomething of the Kind; and ſhew what farther remains to be done, with regard to the perfecting of this noble Invention, and bringing it into familiar Uſe.

Ariſtotle's *Analytics.*

5. *Ariſtotle* has left us four Books of *Analytics:* the two firſt whereof, ſhew how to conſtruct the Forms of Reaſoning; and the two latter, deliver the Art of Diſcovering and Judging of Things.

Gunther's *Books of Method.*

6. Theſe Books of *Analytics* appear to have been little underſtood, till they were illuſtrated and explain'd by *Gunther*; with the Addition of what is found to the ſame Purpoſe in *Plato* [b] and *Galen* [c]. *Gunther* has two Treatiſes upon the Subject: from whence many later Writers upon Methods, ſeem to have drawn their Doctrine; only illuſtrating it with Examples derived from Mathematics, Algebra, and Phyſics [d].

Weigelius's Analyſis Ariſtotelica.

7. This Work of *Gunther* was many Years after ſucceeded by another of the great Mathematician *Weigelius*; wherein he endeavours to deduce the Art of Demonſtration from mathematical Principles; and farther to explain, illuſtrate, and ſhew the Uſe of *Ariſtotle*'s *Analytics* [e].

Des Cartes de Methodo.

8. The celebrated M. *des Cartes* wrote an expreſs Treatiſe *de Methodo*; wherein he reduces the whole Art to four Rules, that ſeem contain'd in *Ariſtotle*'s *Analytics*; and will be found to coincide with the *Medicina Mentis*, mentioned below [f]. This Method of *des Cartes*, is deliver'd, with conſiderable Improvements, in the fourth Part of the *Art de Penſer*; where the Author conſtitutes two Methods; *viz.* the *Analytical*, and *Synthetical*; the former for Diſcovering, and the latter for Teaching. And he illuſtrates the Whole with a Variety of Examples, as well phyſical as mathematical.

Tſchirnhaus's Medicina Mentis.

9. Upon the ſame Foundation, in the Year 1687, the excellent M. *Tſchirnhaus*, a Member of the Royal Academy of Sciences at *Paris*, publiſhed an Eſſay towards a genuine Logic, or Method of diſcovering unknown Truths [g]. This is an extraordinary Performance, that proceeds entirely upon the mathematical, or rather algebraical Method; and deſerves to be read with Care and Attention.

The Occaſion of that Work.

10. M. *Tſchirnhaus*, reflecting that Mathematicians being the only Set of Men, who either maintain'd no Controverſies, or at leaſt ſoon came to a Determination of them; hence apprehended, that Mathematicians alone

[b] See *Plato*, in *Phædr.* paſſim.

[c] See *Galen, de optim. Docend. gen.*

[d] See *Owenus Guntherus Methodorum Tractatus duo, continentes totius artis Logicæ medullam, facultatem omnium Scientiarum ac Demonſtrationum Principia inveniendi, dijudicandique rationem.* Helmſtad. 1586.

[e] See *Analyſis Ariſtotelica, ex Euclide reſtituta.* Jenæ 1658.

[f] §. 9.

[g] *Medicina Mentis, ſive Artis Inveniendi Præcepta Generalia:* or what explains the Deſign better, *Tantamen genuinæ Logicæ, ubi diſſeritur de Methodo detegendi incognitas Veritates.* The Second Edition is corrected and enlarged by the Author.

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alone were poſſeſſed of the right Method of Enquiry. Upon this, he applied himſelf to mathematical Studies; in order to ſee whether, by making the proper Alterations, the mathematical Method could not alſo be accommodated to other Subjects.

The Perfection of Algebra.

11. In particular, he applied himſelf to *Algebra*; and found that this Art performs even more than it promiſes; and with the higheſt Degree of Certainty: when, having acquired a Habit of ſolving the greateſt Difficulties therein, and examining the ſecret Nature of its Method, or Manner of Procedure; he ſays, he obſerved that unknown Truths may be diſcover'd, after the ſame Manner, not only in Mathematics, but in every other Science.

The Foundation of Certainty.

12. He makes the Foundation of human Certainty to lie in thoſe Things wherein the Operation of the Underſtanding is moſt manifeſt; or thoſe which may be conceived, without any Poſſibility of a Contradiction; as that the Whole is greater than a Part; that the *Radii* of a Circle are equal, *&c.* whence numerous other Truths may be drawn: and, on the other hand, he lays it down for certain, that thoſe Things which cannot be conceived, are falſe.

The Cautions required in laying it.

13. But here the Author cautions us againſt being deceived by the *Imagination*; for, according to him, many Things are perceived by the Imagination only; of which Things no diſtinct Notion, or Conception, can, by Words, be communicated to another; as in the Caſe of Pain, Light, Colours, Sound, *&c.* Hence he recommends two Ways of diſtinguiſhing between the *Perceptions* of the *Imagination*, and the *Conceptions* of the *Underſtanding*. The firſt is, by large and frequent Experience, and eſpecially, by the Help of Mathematics, to acquire a Habit of finding the Difference betwixt them; and the ſecond, is to conſider the Equality there is in the human Underſtanding, which all Men have equally alike: for what a Man truly conceives, he can communicate to another; as we ſee in mathematical Demonſtrations, which are equally underſtood by all Men; whereas thoſe Things which are perceived by the Imagination, as he calls it, are perceived unequally, or more by ſome, and leſs by others. And by juſtly diſtinguiſhing betwixt theſe two Powers, or Faculties of the Mind, he ſuppoſes many great Errors may be avoided.

The Way of diſcovering new Truths.

14. We next proceed to the Author's Method of diſcovering new Truths; wherein he ſuppoſes that any one may continually advance to an indeterminate Length, without Danger of falling into Error. And here he adviſes us firſt to procure, with great Diligence, a Stock of all the poſſible *Conceptions* which the Mind, in the common Courſe of Studies and Occaſions, takes Cognizance of. For, from theſe Conceptions, *Definitions*, in his Method, are to be immediately formed; then Properties to be deduced from theſe *Definitions*; which Properties he calls by the Name of *Axioms:* and from the Definitions, combined all

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manner of Ways, he diſcovers ſecondary *Truths*, or *Theorems*; thus making the whole Proceſs algebraical.

That Men may form juſt Definitions.

15. He determines it to be in the Power of Men to form ſcientifical *Definitions*; and in order to form them juſtly, adviſes us to conſider the Manner wherein the Thing to be defined is itſelf actually formed: or, as he calls it, ſtill in Alluſion to Mathematics, generated; and from this Conſideration, he directs us to derive the Definition. Thus, for Example, he defines Virtue to be the Power which Men have of preſerving their own Nature, according to the Laws of juſt Reaſon; or of procuring to themſelves all the real Perfections both of Body and Mind; or, again, the Perfection, or Melioration of human Nature, according to the Laws of juſt Reaſon.

Rules for forming them.

16. To facilitate this Buſineſs of forming Definitions, he lays down three general Rules. The *firſt* is, for reducing Things, in Thought, under their ultimate Kinds, or moſt general Conceptions. And theſe higheſt mental Kinds, or Claſſes, he makes to be three; relating to Things *Imaginary*, *Mathematical*, and *Phyſical*: under which Heads all Things that exiſt may be ranged.

The firſt.

The ſecond.

17. The *ſecond* Rule is, when Things are thus reduced under their higheſt Kinds, or Claſſes, to obſerve, either by Reaſon or Experience, what Things thoſe are which remain continually preſent in every Conception.

The third.

18. The *third* Rule is, that all the formed Conceptions be ſo order'd, as to ſucceed each other, according to what he calls the Number of Poſſibilities, or Elements; or according as one Thing ſuppoſes the Exiſtence of another: beginning with the ſimple Caſes, and proceeding gradually to the more complex.

The Elements of Things.

19. The firſt Elements of *Imaginary Things*, perceived by the Senſe [h], he makes to be Fluidity, and Solidity; the firſt of the *Mathematical*, he makes to be Points, ſtrait Lines, and Curves; and the firſt of the *Phyſical*, Matter, Motion, and Reſt; without which nothing farther can be conceived. Theſe Rules he explains and illuſtrates by many Examples, eſpecially of the mathematical Kind: and then proceeds to ſhew the Way of forming Axioms from theſe genuine Definitions; which he ſuppoſes to be the Elements, or firſt Principles of Truths. And by conſidering theſe Definitions, either ſimply, or comparatively, and in all their elementary Relations, he deduces thoſe Truths from them, which he calls *Axioms*. And thus, by conſidering the ſcientifical Definitions of a ſtrait Line and a Circle, or the Relations ariſing from their Generations; a large Number of *Axioms* may be deduced. For Example, from conſidering the Generation of a Circle, by the Revolution of a ſtrait Line about a fixed Point, this Axiom ariſes; *viz.* that the Motion is

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[h] See above, §. 13.

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ſlower towards the Centre, and quicker towards the Circumference. And ſo in other Caſes.

20. After the requiſite Definitions are formed, and compared together, the laſt Thing is to combine, or join them with each other, ſo as to conſtitute what the Author calls *Theorems*, or new Truths. For two or more Definitions, or Natures, being thus joined together, there may hence ariſe different Natures, or new Poſſibilities, depending upon each other: as we ſee in compound Machines, *&c.* And this the Author again illuſtrates with a great Variety of geometrical and phyſical Examples. The whole Procedure he declares to be the ſame that is uſed by the Maſters of Algebra, for ſolving ſuch Problems, as at firſt Sight might appear unſolvable, by any human Genius. For a Problem being propoſed, the Thing is repreſented to the Eye, as if it were already known and diſcover'd; ſo as clearly to ſhew what Particulars are here joined together; whilſt the Natures, or Definitions, thereof are either already known, or actually exhibited. Then each different Nature is ſeparately conſider'd, and expreſſed by a different Equation, in the moſt ſimple Characters poſſible. And now theſe ſeveral Equations are variouſly compared, or combined together, till a ſingle Equation thence ariſes, and includes the Natures before expreſs'd by different *Equations*; ſo as clearly to demonſtrate how the Queſtion propoſed may receive a Solution. *The Method algebraical.*

21. The Author afterwards ſhews how his Method of diſcovering Truth may be eaſed: and in order thereto, firſt removes the *Impediments* in the Way; among the chief whereof he places *Falſhoods*, *Prejudices*, and *Errors*; enquires into their Origin; and produces Inſtances thereof, in his three Kinds of Subjects, *viz. Imaginary*, *Mathematical*, and *Phyſical*. He accounts thoſe the moſt ſubtile and treacherous Errors, when imaginary Matters are confounded with real, or phyſical ones; which he obſerves to be done even by the moſt acute Philoſophers among the Moderns, in laying down the Principles of Nature; and ſhews how various Sects and Prejudices have thence ariſen, and ſpread themſelves. *How to be facilitated.* Viz. (1.) *by correcting Errors.*

22. Theſe falſe Philoſophies, and reigning Prejudices, he apprehends may be corrected two Ways; *viz. firſt*, by exactly diſtinguiſhing betwixt the Operations of the Underſtanding, and thoſe of the Imagination [1]; and, *ſecondly*, by aſſiſting the Underſtanding, in the Diſcovery of Truth, with the Imagination directed by a good Method of Inveſtigation. And this Help is afforded, (1.) by a juſt adapting of Words to Things; (2.) by proper Characters for different Ideas; (3.) by Motions, or moving Engines, and Contrivances, to aſſiſt the Mind in its Operations; and, (4.) by new Experiments, which give new Conceptions. And by this Means he ſuppoſes the Imagination may be brought to co-operate with the Underſtanding. (2.) *Diſtinguiſhing betwixt the Underſtanding and Imagination; and making them co-operate.*

23. The

[1] See above, §. 13.

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Valuing what is known; and having no immediate regard to Utility.

23. The *ſecond Impediment*, he makes to be this; that we do not duly regard, nor attentively conſider, the Things already known: and the *third*, that we too much regard the Uſefulneſs of Knowledge, and Diſcoveries; whereas, he ſays, we ought to content ourſelves with the bare Diſcovery of new Truths: otherwiſe we block up the Way to the moſt uſeful Things of all. For a very ſmall natural Power, which in the abſtract Conception, appears of very little Significance, may yet prove infinitely uſeful in its future Applications; as in the Caſe of the Magnetic Needle, Printing, Gunpowder, *&c.* For numberleſs Inventions of this Kind may be derived from trivial Experiments.

Helping the Indifference of the Mind; ſhortning the Work; and obtaining Time for it.

24. The *fourth Impediment*, he makes to be a natural Indiſpoſition in Men; whence they are not always fit to go upon the Enquiry after Truth: and for this Indiſpoſition he propoſes ſeveral Remedies. The *fifth Impediment*, is a too long Series of Inveſtigation; which he endeavours to remove by a proper Diſtribution of the Work, and eſtabliſhing a proper Order. And the *ſixth Impediment*, he makes to be this; that the Affairs of Life often prevent our enquiring after Truth: which Hindrance he propoſes to remove, by directing us to follow our own Inclination in Purſuits.

The Diſcovery of unknown Truths, to regard three Particulars.

25. In the laſt Place, he comes to deliver the Method of diſcovering unknown Truths, with reſpect, (1.) to ourſelves, in following our own Inclinations; (2.) with reſpect to thoſe Sciences, the Knowledge whereof is the moſt neceſſary, or moſt pleaſing; and, (3.) with reſpect to Natural Philoſophy, which, when known is, according to him, the moſt delightful of all Science. For by Natural Philoſophy he underſtands a Knowledge of the Univerſe, demonſtrated *a priori*, in exact mathematical Order; and confirmed *a poſteriori*, by manifeſt Experiments, ſufficient to convince the Imagination.

The Medicina Mentis *compared with the* Novum Organum.

26. Such is the general Plan of the *Medicina Mentis*; wherein we may obſerve much Sagacity and Ingenuity: but perhaps, when cloſely examined, the Work will appear a little too much influenced by the Notion, which the Author at firſt eſpouſed, of fitting the direct Algebraical Method to univerſal Philoſophy; and that he has thus endeavoured to found an univerſal Art of Inveſtigation upon one, which, tho' extremely noble and excellent, is yet limited or confined: or that, at beſt, his Method is not ſufficiently general, or fitted for univerſal Practice; but rather formed according to the Model of Man, than the Model of Nature. It may alſo, till farther improv'd, appear to be more mental than practical; and to be better fitted for ſolving Phænomena in the ordinary Manner, aſſigning probable Reaſons of Things, and making all ſquare with the human Mind; than to diſcover, and ſuch actuating Cauſes as ſhall enable Men to ſubdue and conquer Nature by Works: in which Light, it ſeems to fall vaſtly ſhort of the *Novum Organum*, or Art of *Inveſtigating Forms*.

27. But

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27. But tho' in this principal View, the *Medicina Mentis* may not be ſo uſeful as the *Novum Organum*, yet they have a remarkable Agreement in numerous other reſpects; and may be made greatly to aſſiſt and promote each other: eſpecially the *Medicina Mentis* will prove ſerviceable to the *Novum Organum*, in the forming of Notions; which M. *Tſchirnhaus* terms the *forming of Definitions*. Thus much is certain, that they both deſerve to be farther improved, and reduced to Practice: for the Field of Nature is ſo large, as to require all the Engines, and artificial Helps, that can any way be procured. And if this Method of M. *Tſchirnhaus* ſhall be brought to Perfection, or commodiouſly fitted for *Practice*; it will then, perhaps, be found to coincide with the *Novum Organum*, ſo as to conſtitute a Part of that general *Engine*, from whence, it ſeems in great meaſure, to have been derived: for, as the *Medicina Mentis* is the *Algebra of Men*, applied to *Things*; ſo the *Novum Organum* may be called the *Algebra of Nature*, applied to herſelf.

The Engliſh Philoſophers who have endeavoured at Methods.

28. Amongſt the later Philoſophers of our own Nation, who have endeavoured to improve, or find out, Methods of making new Diſcoveries; the Principal ſeem to be Mr. *Boyle*, Mr. *Locke*, Dr. *Hooke*, and Sir *Iſaac Newton*. Mr. *Boyle* has given us a particular Account of the Method he purſued, in his Philoſophical Enquiries; which plainly appears to be formed upon the Model of the Lord *Bacon*; and is no other than a looſe and imperfect Kind of Induction, proceeding upon certain *Tables* of Enquiry, or *general Heads of Hiſtory*. For in every regular Enquiry, Mr. *Boyle* firſt propoſed to himſelf three Kinds of Orders, Ranks or Claſſes, under which he ranged all the Particulars relating to the Hiſtory of his Subject; whether it were a Body, a Quality, an Operation, or a Proceſs. The firſt general Order, or Place, was deſtined to receive all ſuch Titles, or Heads of Enquiry, as readily occurred upon the firſt deliberate View, or general Survey of the Subject; the Titles being made ſufficiently numerous and comprehenſive, and not accommodated to any Hypotheſis. His Titles of the ſecond Order were ſet down, after a careful Conſideration of the Heads of the firſt; trying the Experiments, and making the Obſervations there propoſed; and after reading Authors, converſing with Philoſophers, and meditating upon the Subject; ſo as thus to have procured a full Information with relation to the Whole thereof. This *Set of Titles* will, of courſe, be more exact, more full, and better ranged than the firſt; whence the Materials here contained or indicated, will, with the proper Introduction, Alterations in Method, Connections, Tranſitions, Additions, farther Directions, *&c.* begin to form a Natural Hiſtory of the Subject; that may be improved, from Time to Time, or from Age to Age, till it arrives at Perfection. Laſtly, where the Enquiry was difficult, or large, the Author thought proper to form a middle Order of Titles, interpoſing betwixt the two former; and this by carefully examining and comparing the ſeveral Particulars ranged under the Titles of the firſt Order: ſo as thus to diſcover many new Directions, and

Mr. Boyle's Method.

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Heads of Enquiry; which being afterwards added to the former, may require the whole to be new-moulded; and afford a much more copious and uſeful *Set of Titles*, than the firſt: all which Titles are to be filled up, as Experiments or Obſervations are made, or the proper Informations obtained. But after all, as many Particulars may happen to be omitted, or not be thought of at the proper Time, or when they are wanted; and as the Hiſtory muſt needs be improvable by After-thought, and farther Knowledge; the Author leaves a Place empty, by way of Appendix to his Titles, for receiving the Particulars omitted, that belong to ſome of the Titles; but were forgot or overlooked: and another for Particulars to be added; under which ſuch new Matter was to be received, as might be procured by farther Diſcoveries and Improvements made, after the Hiſtory ſhould be written, or publiſhed [m].

Mr. Locke's *Eſſay upon Human Underſtanding.*

29. Mr. *Locke* appears to have deſigned a kind of familiar Explanation, and Illuſtration of many Aphoriſms of the *firſt* Part of the *Novum Organum*; in his excellent *Eſſay upon Human Underſtanding*; and again, in his poſthumous Piece concerning the *Conduct of the Underſtanding*: but he ſeems no where to have explained the *ſecond* Part of the *Novum Organum*; or the Art of Inveſtigating Forms. His Philoſophical Writings are now generally known and read; but as they tend to the curing of Prejudice, preparing the Mind, and fitting it for the Diſcovery of Truth, rather than to open any freſh Fountains of Science, or teach the Art of Diſcovery, they need not here be inſiſted on; eſpecially as they have but little immediate regard to Natural Philoſophy; from whence all the Sciences ſhou'd be derived and ſupplied. And the ſame Character may be underſtood proportionably of Father *Malbranche*'s *Recherche de la Verité.*

Dr. Hooke's *Method of improving Natural Philoſophy.*

30. Dr. *Hooke*, who was a great Maſter in the Art of Invention; as appears by his numerous Contrivances and Diſcoveries; purſued much the ſame Method as Mr. *Boyle*. In his Piece for *Improving Natural Philoſophy*, he ſeems to have propoſed to perfect the Deſign of the Lord *Bacon*'s *Novum Organum*. And it is great Pity that a Perſon ſo well ſuited to the Work, did not proceed farther in it. All he has done towards it, is little more than a familiar Repetition of what the Lord *Bacon* had before laid down under the *Doctrine of Idols*; *Helps for the Senſes*; the *Doctrine of Prerogative Inſtances*; and the *Method of collecting a Hiſtory of Nature*: tho' the Doctor has ſometimes added apt Illuſtrations, large Explanations, and particular Improvements.

Left unfiniſhed.

31. Had Dr. *Hooke* finiſhed the Piece, according to the Scheme he at firſt propoſed, it would doubtleſs have familiarized the Parts of the *Novum Organum*, which are already extant; and, perhaps, have ſupplied the reſt: but as it now ſtands, it is defective in thoſe very Parts which are wanting in the *Novum Organum*. It was indeed a poſthumous Piece; and, perhaps, purpoſely neglected by the Doctor towards the Cloſe of his Life,

[m] See Mr. *Boyle*'s Works, *Abridgm. Vol.* I. *Prelim. Diſc. p.* 24.

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Life; for fear of divulging his *Mechanical*, or *Philoſophical*, *Algebra*, which he ſeems to have learnt from the *Novum Organum*, and deſired to conceal [n].

32. Sir *Iſaac Newton* appears to have had a very extraordinary Method of making Diſcoveries: but as that great Philoſopher did not think proper to reveal it; Philoſophers of an inferior Rank can only gueſs at it, and admire what they do not fully underſtand. Where the Buſineſs of Inveſtigation depended upon Experiments; as particularly in his excellent Enquiries about Light; he ſeems firſt to have imagined, in his Mind, how Things were; and afterwards contrived his Experiments, on purpoſe to ſhew, whether thoſe Things were as he had preconceived them, or not: and according to the Information thus obtained; whether from his own Experiments and Obſervations, or thoſe of others; he altered and improved his Notions, till after various Trials, and various Amendments, his Notions appeared to be juſt and perfect. And this is a ſhort, or mechanical Method of Induction. *Sir* Iſaac Newton's *Method conjectured.*

33. But beſides this kind of mechanical Method, Sir *Iſaac Newton* had a mathematical one, afforded him by his Dexterity in *Algebra*, and his admirable Invention of *Fluxions*; which are not to be underſtood and applied in Philoſophy, without great Sagacity and Caution: for otherwiſe they will be apt to miſlead. And here this great Author has ſhewn uncommon Addreſs; and found the Secret of calculating mathematical, or mental Forces, Powers, and Motions, and afterwards applying them to natural Bodies, and natural Things. But the Attempt is ſuitable only to a diſtinguiſhing and ſublime Genius, that can let Mathematics conſtantly rule and preſide over Phyſics, without corrupting Philoſophy, or rendering it fantaſtical. *His Algebra and Fluxions.*

34. At other Times this great Philoſopher obſerved the ſtricter Laws of Induction; collected the neceſſary Facts, Obſervations, and Experiments; and by contemplating them in his Mind, or reaſoning upon them, gave the Reſult, with its Conſequences; as in the Theory of the Tides, Moon, Comets, *&c.* So that he ſeems to have uſed all ſorts of Methods, by Turns; or to have formed one to himſelf, compounded of the mechanical, mathematical, and the uſual inductive Method. So that if this mixed Method alſo were to be proſecuted, and brought to the greateſt Perfection whereof it is capable, it may fall under that ſtill more general one of the *Novum Organum*. *His Method of Induction.*

35. This *Novum Organum*, we have ſeen, is divided by its Author into two general Parts; *viz.* one that is deſigned to be preparatory or introductory to the other, which is ſcientifical or doctrinal; ſo as clearly to deliver a new Way of Proceeding upon all kinds of Enquiries; with *The general Scheme of the* Novum Organum, *divided into two Parts.*

[n] See the Account of his Life, prefixed to his *Poſthumous Works*, p. 4. See alſo his *Method of improving Natural Philoſophy*, p. 65. and compare the whole of that Piece, the *Preface* to his *Micrographia*, and his own particular Enquiries, with the Doctrine of the *Novum Organum*.

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the greateſt Advantage to the Mind, for acquiring a thorough Knowledge of the Works of Nature; and leading to an unlimited Practice for accommodating human Life.

The firſt Part divided into ſeven Sections.

36. The Deſign of the preparatory Part, is to remove Prejudice, procure a fair Hearing, and give ſome tolerable Notion of the whole *Inſtauration*. It may be ſubdivided into ſeven leſſer Parts, or Sections; the firſt whereof endeavours (1.) to awaken the Mind, as it were from its Lethargy; and make it ſee that Philoſophy and the Sciences are ſo far from being perfected; that (2.) Men are hitherto unprovided of the true Inſtruments and Means of forming the Sciences; (3.) that, as Knowledge and Power conſtantly go hand in hand, Men have but little Knowledge, becauſe they produce but few conſiderable Effects; (4.) that the common Ways of Reaſoning and Contemplating, tho' ſo much magnified, are but deluſory Things, and require much Rectification and Amendment; (5.) that the common Logic and Syllogiſm, however uſeful in common Affairs, are of no Service in Philoſophy; (6.) that our firſt Notions of Things are faulty, and require to be corrected, improved, and verified; (7.) that the ſure Way of diſcovering Truth has not hitherto been tried; (8.) that Men form vain *Idols* to themſelves, inſtead of diſcovering the Truths of Nature; (9.) that a more powerful Logic than the common, or a kind of Engine for the Mind, is abſolutely required for the Service of Philoſophy; (10.) Men prepoſterouſly delight in a haſty and erroneous Way of diſputing, judging, and confuting, according to the ſcanty Meaſure of their own Knowledge, and the ſuppoſed Truth of their own ill-form'd Notions.

The Reſult of the firſt Section.

The Reſult of the ſecond Section.

37. The *Second Section* ſhews the ſeveral Errors we commit in forming our Notions of Things; and how detrimental ſuch Errors are to the Progreſs of Philoſophy. It ſhews that the Mind is tinged and infected *four* ſeveral Ways: for (1.) Men in general have a ſtrange Propenſity, and obſtinate Property, of referring all Things to themſelves; as if nothing exiſted otherwiſe than is repreſented by their immediate Senſes; or as if there was nothing in Nature, but what their Senſes immediately perceive: whereas the other Parts of the Univerſe, as the Air, Æther, *&c.* and other Creatures, are to be regarded in Philoſophy, as well as Man. And here Man is ſhewn (1.) inclined to feign and invent from within himſelf, inſtead of ſearching and diſcovering; (2.) to be extremely liable to Prepoſſeſſion and Prejudice, ſo as with Difficulty to remove thoſe falſe and ſuperſtitious Notions he has once imbibed; as of Aſtrology, Omens, Judgments, *&c.* (3.) to be eaſily moved and led away by thoſe Things that affect the Imagination, more than the Reaſon; (4.) to be fond of launching into Infinity, and the higheſt Univerſals; diſdaining the intermediate Truths, which in Practice are more ſerviceable; (5.) to be drenched in the Affections of his Body, and thence eaſily turned aſide to Pride, Vanity, falſe Hopes, *&c.* (6.) 'tis ſhewn that the human Senſes, without farther Aſſiſtance, are of little Uſe

Falſe Imaginations belonging to Men in general.

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in Philoſophy, tho' Men attribute ſuch great Matters to them; and (7.) that Men are fond of abſtract Notions, and general Theories; at the ſame time neglecting the due Enquiry into Nature, and Particulars; which alone can ſhew them what Things are. And theſe Imperfections belong to the Species of Men, or Mankind in general.

Others to each Man in particular.

38. (2.) The Mind is alſo infected differently, according to the Conſtitution, Complexion, Bent, or Inclination of each particular Perſon; or according to his Education, Cuſtom, Converſation, Studies, Courſe of Reading, Employ, and other accidental Matters; whence every Man has his own peculiar Biaſs; or, as it were his own particular Glaſs, tinged to his Humour, thro' which he views every thing. And hence ſome Men doat on Mathematics; others on Chemiſtry; others on Logic, *&c.* and accordingly tinge and infect whatever they apply to, with Mathematics, Chemiſtry, Logic, *&c.* whereas the true Philoſopher ſhould not be warped to any particular Branch of Science; but remain equally affected to them all; as they may all afford their Aſſiſtance in promoting Philoſophy. But in the preſent State of Men and Things, ſome ſubtile Capacities purſue the minute Differences of their Subject, and make no End of ſplitting and dividing; as in Anatomy, *&c.* till the mechanical Structure, or Organization, of the Parts, is loſt: and others, on the contrary, conſider only the Wholes, without examining the Parts. Some fondly admire the Ancients, as *Ariſtotle*, *Plato*, &c. and others ſome favourite modern Philoſopher. But unleſs the Mind be thoroughly convinced of the Folly and Abſurdity of ſuch a Procedure; and be brought, by Art and Habit, to a quite contrary Temper; true Philoſophy cannot be effectually promoted: for the Sciences formed by diſtemper'd Minds will partake of the Diſtempers; and accordingly appear trifling, groſs, partial, half-faced, diſtorted, fantaſtical, *&c.*

Falſe Notions ariſing from Words.

39. (3.) The third Way wherein the Mind becomes perverted, is by the Abuſe, or improper Uſe of Words; for the philoſophical Words, in all Languages, are commonly falſe, or inadequate, Marks, or Signs, of Things; and by no means convey juſt and perfect Notions. So that Men are continually impoſed upon, even againſt their Wills, by a wrong Impoſition of Words; which are generally coined by the Vulgar; or if by Philoſophers, it is without taking the requiſite Pains and Care to form Notions duly, from Things; and then give ſuitable Names to thoſe Notions. And hence the Reaſonings, the Diſcourſes, and even the Writings of Men, are often ſtrangely confuſed, or but ſeldom perfectly intelligible; and propagate imperfect Notions, which Men take by Conſent, without enquiring whether they are juſt, or how they were formed. But, in order to improve Philoſophy, it is of great Importance to have Words ſuitably adapted, and kept invariably to denote perfect Notions; ſo as to expreſs or convey ſuch Notions without Deluſion, or Impoſition. But no Language of this kind can be made, till a Set of ſuch Notions ſhall be duly formed, from Things; which depends

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upon the Uſe of Induction. And as this Language, and theſe Notions, are hitherto, in great meaſure, wanting; the Mind thus remains unprovided of one very great Help for the Improvement of Philoſophy.

The Reſult of the third Section.

40. (4.) The Mind is, again, ſtrangely perverted, by fabulous Theories, and romantic Philoſophies; which are extremely numerous, and ſtill continue to increaſe. The *Third Section* divides them into three general Kinds; *viz. Sophiſtical*, *Empirical*, and *Superſtitious*. *Sophiſtical Philoſophies* are thoſe formed upon common, or haſty Obſervations, and Experiments; by a ſubſequent Operation of the Mind. Thus *Ariſtotle*'s Philoſophy was formed upon common Obſervations, wrought up by his Logic; ſo as to become ſophiſtical, and corrupted: for common Obſervations, and obvious Experiments, are not of themſelves, fit to build a ſerviceable Philoſophy upon; as they by no means ſhew all the ſecret Motions of Nature; and the Laws by which Things are govern'd. Nor is the common Logic an Engine at all ſuited to deal with Experiments, Obſervations, and Nature.

Sophiſtical Philoſophies, what.

Falſe Notions ariſing from fantaſtic Theories.

Empirical Philoſophies, what.

41. *Empirical Philoſophies* are thoſe formed upon only a few Experiments, tho' made with great Exactneſs; as Dr. *Gilbert*'s Philoſophy is formed upon his magnetical Experiments; and the Philoſophy of the *Chemiſts* upon a few repeated Experiments of the Furnace, *&c.* But to form a general Philoſophy upon a few Experiments, muſt needs appear a childiſh Attempt, to thoſe who conſider the Variety and Extent of Nature; and the treacherous, faulty, or raſh Propenſity of the Mind, in reaſoning from them.

Superſtitious Philoſophies, what.

42. *Superſtitious Philoſophies* are thoſe where Matters of Faith and Religion are worked up with thoſe of Reaſon and Senſe; which makes fantaſtical Philoſophies, and heretical Religions. Thus the Philoſophy of *Pythagoras* was clogged with groſs Superſtition; and that of *Plato* with one more dangerous: and thus, of later Date, a Variety of Theories have been given of the Earth, from the firſt Book of *Geneſis*; which has had the Fate to be differently explained, and worked up into oppoſite Syſtems, according to the different Fancies of Men; or the prevailing Philoſophies of the Times. And thus it appears, that ſcarce any one has had Thoughts of deriving a pure and perfect Philoſophy from Nature, that ſhould be a true Model of the World, without any more Mixture of Logic, Mathematics, Chemiſtry, Magnetics, *&c.* than may be found in Nature.

The Mind abuſes itſelf, by forming falſe Notions.

43. In the next Place are ſhewn ſome particular Ways which the Mind has of abuſing itſelf, by forming wrong Notions of the Things that are ſeen and conſider'd. Thus upon ſeeing the Changes wrought in Bodies by the mechanic Arts, in the way of Combination and Reſolution, Men are apt to imagine that Nature makes uſe of the ſame Expedients in compounding and ſeparating Bodies; whence ſeem to have ſprung the deluſory and imperfect Notions of the four common Elements; as if all Bodies were compounded of, and reſolved into theſe: hence thoſe called the

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the *Chemical Principles*, &c. And thus from ſeeing Mechanics work with the Ruler and Compaſs, ſeems to have ariſen the crude and imperfect Notion, that Nature operates geometrically, *&c.* But theſe, and the like Notions being ſuperficial, and erroneous, cannot be admitted into Philoſophy, without corrupting it. The ſame is to be underſtood of Logical, Mathematical, and Metaphyſical Notions; raſhly introduced and mixed with ſuch as are Phyſical.

The Mind ſubject to two Exceſſes.

44. Again, the Mind is apt to run into two contrary Extremes; ſo as either to be very poſitive and dogmatical; or elſe extremely looſe and ſceptical, in Philoſophy. Thus *Ariſtotle* determining to cut off all future occaſion of doubting, called up Queſtions, and reſolved them; to ſhew that all was now ſettled and determined. But *Pyrrho* and his Followers doubted of every thing. And in this manner Men commonly either ſtop ſhort too ſoon, and fancy that enough is known already; or continue fluctuating in Incertainties; or elſe turn aſide to Amuſement, inſtead of endeavouring to procure an active and ſerviceable Philoſophy. And unleſs theſe perverſe Habits be corrected, no pure Philoſophy can be obtained.

Falſe Demonſtrations.

45. But inſtead of endeavouring to correct theſe ill Habits of the Mind, Men have the Talent to confirm and ſtrengthen them, by corrupt and perverted kinds of Proofs and Demonſtrations; which are generally uſed inſtead of the true. For logical Demonſtrations wreſt the Works of Nature, to make them ſquare with the Thoughts of Men; whereas the Thoughts of Men ought to be ſubmitted, and formed according to the Works of Nature: ſo that logical Demonſtrations, applied to phyſical Matters, are only the Play of Words; or at beſt, deceitful and incompatible. For the unaſſiſted Senſes are incompetent; Notions are ill formed from their Reports; the Principles of the Sciences can never be juſtly inferr'd from a Number of Inſtances produced only on one Side; and the preſent Method of arguing from Principles, is erroneous and inconcluſive.

The Logical Kind falſe, when applied to Phyſics.

Experience, the beſt Demonſtration.

46. The beſt Method of Demonſtration, is ſhewn to be the Demonſtration by Experience; provided we do not raſhly endeavour to judge of other Things from it; but proceed therein with great Circumſpection, and rigorous Exactneſs: which Method having been little obſerved, no wonder if true Philoſophy be but little advanced.

The Reſult of the fourth Section.

47. The *fourth Section* proceeds to ſhew by what Signs, or Marks, falſe Theories and Philoſophies may be diſcovered; ſo as to prevent the Mind from being impos'd upon. And here it is made appear, that the Philoſophy in vogue over *Europe*, is principally the ſuperficial, profeſſorial, diſputatious, and ſophiſtical Philoſophy of the *Greeks*, and chiefly of *Ariſtotle*; a Philoſophy which, however it may have ſpread, is little more than Logical, or Verbal; that does not convey ſuch Directions as may enable us to perform any thing conſiderable for the Advantage and Accommodation of Life. And, again, it is ſhewn that the *Greeks* were

The corrupt Philoſophy of Ariſtotle, *ſpread over* Europe.

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Maſters of little Knowledge, eſpecially with regard to the Baſis and Matter of all other Knowledge, Natural Philoſophy.

The beſt Sign of judging of a Philoſophy is by its Fruits.

48. And here the ſureſt Sign whereby to judge of any Philoſophy, is ſhewn to be by its Fruits or Uſefulneſs, in ſupplying the Neceſſities of Mankind; and improving the practical Arts whereon the Accommodations of Life principally depend. But the *Greek* Philoſophy having yielded none of theſe Fruits, it is to be accounted barren. And the ſame Judgment is to be made of the Chemical and Magical Philoſophies; neither of which have enlarged the human Power, in any tolerable Proportion to their high Pretenſions. We are not, therefore, to form a Judgment of any Philoſophy from its Show and Appearance; the Greatneſs of its Authors; the Antiquity of its Origin; the multitude of its Admirers; the Reputation it has gained among learned Men; nor even from general Conſent itſelf; but principally from its Uſe, or the Tendency it has to improve the Mind, enlarge the human Powers, and give us a Command over Nature.

The Reſult of the fifth Section.

49. The *fifth Section* is deſigned to ſhew the Reaſons why the Philoſophers of all Ages have fallen into Errors; and made ſo little real Improvement in the Buſineſs of Philoſophy. Theſe Reaſons amount to this, (1.) that when a true Eſtimate is made, there has, through the ſeveral Ages of the World, been very little Time well ſuited to the Cultivation of *Natural Philoſophy*; which, as muſt be well remembred, is the Foundation of all philoſophical Knowledge; or the true Matter whereof the Sciences ſhould be formed: (2.) that during the Times beſt ſuited to the Study of Natural Philoſophy, little Labour has been beſtowed thereon; the Men of Genius and Learning having chiefly applied themſelves to Morality, Civil Policy, and Religion: (3.) that ſcarce any ſingle Perſon ever applied himſelf entirely to the Study of Natural Philoſophy; which having been always look'd upon as a kind of ſecondary Thing, was only conſulted occaſionally; and, in a perverted manner, made ſubſervient to Phyſic, Mathematics, *&c.* (4.) That the true End of Philoſophy has been entirely miſtaken; which is to enrich and ennoble human Life with uſeful Inventions, new Arts, and new Powers; whereas Philoſophers, as they are called, have had Views to the raiſing of Sects, aggrandizing their own Names, gaining a Dominion over Mens Minds, or ſome ſuch inferior and pernicious Ends. (5.) That wrong Ways have been choſe for advancing Philoſophy; and Argument uſed inſtead of Experiment; Reaſoning and Speculation, inſtead of cloſe Obſervation, and genuine Induction; and the true Method of raiſing fruitful Axioms, and diſcovering Works worthy of Mankind, entirely neglected. (6.) That a few ancient Philoſophers have been obſtinately and perverſly admired, or almoſt adored, as Men of ſupernatural Abilities; to the ſhameful Neglect of improving the human Power: Whereas the Ancients, living in the younger Days of the World, were in many Points of Experience and Knowledge, inferior to the Moderns.

Natural Philoſophy little cultivated, but laboured under great Difficulties through the ſeveral Ages of the World.

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derns. (7.) That a falſe Imagination, as if Men were poſſeſſed of many excellent Arts, and perfect Sciences, has fatally hindered the Improvement of Philoſophy: whereas, the Arts and Sciences at preſent in uſe, are, in reality, but few and weak, in compariſon of what may be diſcovered by the Light of *Axioms*. (8.) That much Craft, and a kind of Impoſture, has been generally uſed, to make the Sciences appear more perfect and compleat than they are; whereby many have been deluded. (9.) That much Vanity has been ſhewn by ſome modern Authors, in boaſting themſelves, and making great Promiſes of delivering extraordinary Things for the Advantage of Mankind; but ſhamefully failing in the Performance, ſober Men have hence taken a Diſtaſte, and too obſtinately believed other practicable Things, to be of the ſame Stamp. (9.) That Men have generally neglected to propoſe themſelves noble and ſuitable Tasks for the Improvement of Philoſophy; and inſtead thereof, have indolently determined many ſober and rational Things to be mere Impoſſibilities, or beyond the reach of Art; at the ſame time greatly over-valuing ſlender Performances. (10.) That religious Zeal, Bigotry, Superſtition, and the School Divinity, have, through ſeveral Ages, been very unfavourable to the Improvement of Natural Philoſophy, and checked its Progreſs. (11.) That the common Schools, Univerſities, Colleges and Societies of learned Men, have alſo generally oppoſed all new and conſiderable Improvements in Knowledge. (12.) That no ſufficient Rewards have been allowed for Inventors and Improvers. And, laſtly, that ſedate and ſober Men have indulged an untimely Deſpair, or entertained a Belief that no farther Improvements can be made in Philoſophy. So that under all theſe Obſtacles and Diſcouragements, it is no wonder if very little true Philoſophy has appeared in the World.

The Reſult of the ſixth Section.

50. The *ſixth Section*, of the firſt Part of the *Novum Organum*, tends to raiſe the Mind from the Languor it may have been thrown into, by the melancholy Proſpect of the former *Section*; and ſets before us, in a native Light, what ſolid Reaſons there are to expect, that, notwithſtanding the Obſtacles and Diſcouragements above enumerated, a genuine Philoſophy may be ſet on Foot; and, if Men will not remain wanting to themſelves, be brought to Perfection; and afford all thoſe Fruits and Advantages that the human State is capable of affording.

The Reaſons there are to expect a farther Improvement of Philoſophy: or the Way of building up Philoſophy anew.

51. And here the Author obſerves, (1.) that as the Art of Navigation has diſcovered new Countries; and carries on a Correſpondence even betwixt the moſt diſtant Parts of the Globe; great Opportunities are thus afforded, of procuring the neceſſary Informations for enlarging the Bounds of Knowledge. (2.) That, as we may plainly perceive the Errors which the ancient Philoſophers fell into, and the Reaſons why they failed in promoting the more ſerviceable Sciences; if the Errors they committed are carefully avoided, and a different Method to be taken, there are Grounds to hope for better Succeſs in future. (3.) That therefore, the Art of Experimenting, and the Art of Reaſoning, are to be joined together;

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gether; or a new Art to be formed by a Mixture of the two, in order to procure a *Sylva*, or ſuitable Collection of prepared and well digeſted Materials for Philoſophy. (4.) That Natural Philoſophy muſt be kept pure and uncorrupted with Logic, Mathematics, and Divinity. (5.) That the Mind muſt diſcharge itſelf of all Prejudice, falſe Notions, phantaſtical Theories, and uſeleſs Philoſophies; and become fit to receive ſuch Notions as are juſt, and purely philoſophical; without any way corrupting or debaſing them. (6.) That a juſt Foundation muſt be laid for Experience, in a *Hiſtory of Nature*, collected with the greateſt Exactneſs, Diligence, Fidelity and Judgment; ſo as to make it extenſive, or to meaſure of the Univerſe; without admitting any thing faulty, foreign, or ſuperfluous. (7.) That, in particular, the more leading and informing Experiments are to be carefully ſought and procured. (8.) That a true Order, or juſt Method, of experimenting be introduced; ſo that Experiments may not remain caſual Things; but an *Art of Experimenting be formed*. (9.) That no Inventions, or particular Ways of working, or combining, the Materials of Philoſophy, be truſted to Thought and Contemplation; but the whole Proceſs be exactly wrote down, or deſcribed on Paper. (10.) That the Matters of a pure *Hiſtory of Nature* be not left in looſe Particulars; but be regularly digeſted and brought into *Tables*; according to the Nature of every Subject; that the Underſtanding may work thereon to the beſt Advantage. (11.) That *Axioms* be formed from theſe *Tables*; ſo as to point out new Experiments, and thence afford ſtill higher *Axioms*, leading to greater Works. (12.) That theſe *Axioms* be formed, not in the Way of the Ancients, by riſing, at once, from Particulars to the moſt general Concluſions; but by careful Steps, in a ſafe and guarded manner; ſo that the *Axioms*, thus raiſed, ſhall not afterwards deceive, but be thoroughly verified, and remain juſt and pregnant Expreſſions of the Laws and Facts of Nature and Art. (13.) That a new *Method of Induction* be employ'd in raiſing theſe *Axioms*; *viz.* ſuch a *Method, as is ſuited at once, to diſcover and demonſtrate Arts and Sciences*; by inveſtigating the real and internal Natures of Things. On this new *Method*, or *Art of Induction*, the Author builds his principal Hopes of improving Philoſophy. And to deliver this *Art*, was the principal Purport of the *Novum Organum*; the Part we are now upon being only introductory thereto. And to give ſome Intimations for perfecting this Art, the preſent *Appendix* is wrote. (14.) The laſt Foundation of Hope, in the way of forſaking paſt Errors, is this; that Natural Philoſophy may be extended, or made to afford Matter to the Sciences; and they again be brought back to Philoſophy; ſo as to make them center therein, without mutilating or diſmembring the Sciences; whilſt they, together with Natural Philoſophy, conſtitute one ſerviceable Corps of Knowledge.

By forſaking the paſt Errors.

An proceeding in a new Method.

52. (15.) The next Fountain of Hope for the Improvement of Knowledge, is the Proſpect which Men may have of future Diſcoveries; if they

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they will put themſelves into the proper Way of Enquiry. For, ſince many Diſcoveries have been hit upon, unexpectedly, or by Accident; as by the Inſtinct of Brutes, *&c.* without going in queſt of them; greater Succeſs may be, doubtleſs, expected from a proper Method of Enquiry, and the Art of experimenting with Reaſon, Induſtry and Sagacity; more eſpecially by the *Method of Induction*, abovementioned, which is a Contrivance for the ſpeedy bringing of new Diſcoveries to Light. (16.) Some conſiderable Improvement of Philoſophy may be alſo reaſonably expected, if the requiſite Time, Expence, and Application ſhall be uſed in collecting ſuch a *Hiſtory of Nature*, as was mentioned above; which is a Thing that has never hitherto appeared; but may be procured, and is no impoſſible, or impracticable Scheme. (17.) And, laſtly, tho' we had leſs Encouragement to hope for Succeſs than we have; yet a Courſe of Trial and Experimenting ſhould be undertaken; becauſe there is thus, at leaſt, a Chance of improving Philoſophy, at the Expence of a little Labour: whereas, to ſit down deſponding, or reſolved againſt all Trial and Attempt, ſeems unworthy of Human Nature.

Reſult of the laſt Section of the firſt Part.

53. The *ſeventh* and laſt *Section* of this preparatory Part of the *Novum Organum*, is calculated to give ſome tolerable Notion, not only of the Deſign of the ſecond Part; but alſo of the whole *Inſtauration:* that the Nature and Uſe of the new Method of Induction may be better underſtood. And here the Author declares, that he has no View to found a Sect in Philoſophy, or procure Followers; but only to lead Men by the hand a little, in order to ſhew them the way of following Nature; and freeing themſelves from the Neceſſity of following any Philoſopher whatever. And in order to prevent all Miſunderſtanding, or Miſconſtruction of this his real Deſign, he proceeds to anſwer the more conſiderable Objections, that might be apt to ariſe againſt it; from the Prejudices, and falſe Notions which Men commonly imbibe.

That a haſty Deſire of Advantages in Philoſophy fruſtrates itſelf.

54. And firſt, becauſe Men are naturally impatient, and immediately deſire to ſee the Advantages of new Undertakings, the Author guards his Reader againſt all raſh and haſty Endeavours after Profit and Advantage; as what will prove highly pernicious, and tend to prevent the good Effects expected. But for thoſe who cannot wait, he leaves them at liberty to uſe, in their own Way, the ſeveral Helps he has afforded towards the Production of conſiderable Works and Effects: for he would by no means hinder, but as much as poſſible promote and expedite the Diſcovery of all advantageous Arts and Works. But till a tolerable *Hiſtory of Nature* is procured, he judges that no very conſiderable Progreſs can be made in what he calls the *genuine Interpretation of Nature*; or forming of rich Axioms, that ſhall lead to new Arts and capital Works. Such a *Hiſtory*, therefore, himſelf propoſes to procure.

Objections againſt a Hiſtory of Nature anſwered.

55. But he apprehends, that ſeveral Objections will be made to this *Hiſtory*; as that it will contain falſe Facts, erroneous Experiments, and diſagreeable, ſubtile, vulgar or abſtruſe Particulars. But all this he ſhews

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amounts to little; becauſe (1.) a few Errors, and even Falſhoods, muſt neceſſarily happen in the beginning of a *Hiſtory of Nature*; and will not prove of any very bad Conſequence; (tho' they ſhould indeed be cautiouſly guarded againſt:) for ſuch Errors and Falſhoods, where but few, are eaſily diſcovered and corrected, when *Axioms* come to be raiſed, or the Interpretation of Nature to be entered upon. (2.) Vulgar Things being uſually as much unknown, with reſpect to their Cauſes, as Things uncommon; ſuch vulgar Things ſhould not be rejected, but received into a *Hiſtory of Nature*. (3.) Diſagreeable or ſordid Matters, ſuch as Corruptions, Putrefactions, *&c.* muſt be here neceſſarily conſider'd, no leſs than others; becauſe they give great Light into the Operations of Nature: and Things for this Deſign muſt not be judged of by the Rules of Elegancy; but according to Utility. And, (4.) *ſubtile, ſpeculative Matters*, are not here received for the Sake of Subtilty and Speculation; but only as they afford Information, lead to practice, and aſſiſt in the *Interpretation of Nature*.

Objection, that all former Philoſophies are rejected.

Anſwer'd.

56. The Author apprehends, it will appear ſtrangely ſhocking, inſolent and monſtrous, that he ſhould at one Stroke ſet aſide all the ancient Philoſophies, and all the Sciences; and go entirely upon a new Scheme of building up Philoſophy from a different Foundation. But he judges, that this Procedure, when duly conſidered, will be found more rational, modeſt, and ſerviceable, than to have uſed artful Accommodations, and patched up a deceitful Syſtem of new and old Materials: for as the Ancients raiſed their Philoſophies upon falſe Notions, or falſe Principles, diſcovered in an erroneous Manner; there was an abſolute Neceſſity of beginning the whole Work anew. Nor does he think it inſolence, if by means of an Engine for the Mind, or particular Helps which the Ancients never knew, any one, of common Abilities, ſhould raiſe a more ſerviceable Structure of Philoſophy, than they by means of the naked Uuderſtanding.

That this Scheme has regard to Contemplation, as well as Practice.

57. To the Objection, that the End of all this Labour is wrong fixed; as tending to Practice, and the Accommodation of Life; and not to the abſtract Contemplation of Truth, which is a much nobler Thing; 'tis anſwered, that the latter is indeed preferable to the former; but that, in the Method propoſed, both Ends are anſwered at once: the Deſign being here to give a genuine, a native, and juſt Repreſentation of the World, ſuch as it exiſts; which is not only the moſt uſeful Knowledge, but the nobleſt Contemplation; that unites Theory and Practice together, in their higheſt Degree, and makes them one and the ſame Thing.

The Method here propoſed, not uſed by the Ancients.

58. To the Objection, that perhaps the Author's new Method is no more than ſome old one, and therefore not of any extraordinary Uſe; he anſwers, that the Ancients have delivered their Method of forming the Sciences; which was by flying immediately from a few Particulars to general Concluſions; a Method very different from the Method he propoſes, by a rigorous and careful *Induction:* that, in particular, his Method does not tend to *Sceptiſciſm*, but to a ſcientifical doubting at firſt, that

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that the greateſt Certainties may be afterwards diſcovered; and that this Method regards not any one particular Art or Science, but all Arts and all Subjects univerſally.

59. But the Author hopes that no one will ſuſpect his Deſign is to aboliſh, and utterly deſtroy the Arts and Sciences at preſent in Uſe; eſpecially as he has, in his *de Augmentis Scientiarum*, taken ſo much Pains to improve, and ſhew the Way of perfecting them: all he aims at, in this reſpect, being to convince the Mind, that the Sciences in vogue are of no Uſe for enlarging the Bounds of Knowledge, and diſcovering new Arts, and practical Works: which End, his own Method is entirely calculated to promote. And yet he does not pretend that this Method of his is abſolutely perfect or unimproveable; but, on the contrary, that it will doubtleſs improve, as new Arts are found, or new Diſcoveries made. And thus he concludes the firſt, or preparatory Part of this Work. *Does not deſtroy the Sciences already in being.*

60. The *ſecond Part*, as was before obſerved, is wholly doctrinal, or ſcientifical; and goes directly upon delivering the *new Art of Induction*, or *Method of Interpreting Nature*, in order to form an extenſive Philoſophy; or procure an exact Copy of the Univerſe, for perfecting the Underſtanding, and leading to an unlimited Practice. And here, as the moſt excellent Things are often the moſt difficult to obtain; the Doctrine delivered will appear ſomewhat abſtruſe, till the Mind becomes a little acquainted with it; after which all the Difficulties vaniſh, and an agreeable Proſpect is obtained of a ſure and practicable Way of procuring, in a moderate Time, with the proper Aſſiſtances, ſuch a Philoſophy as ſhall highly improve the State of Human Nature. *General Scheme of the ſecond Part.*

61. The Foundation of the Thing is laid in finding a Method of increaſing the human Powers and Knowledge, to their greateſt poſſible Perfection. And this the Author ſhews may be done by diſcovering what he, in a new and peculiar Senſe, calls the *Forms of Things*; that is, the Laws or Powers of Nature, by which Things phyſically exiſt, are generated, or have their Effects. And theſe *Forms*, or *Laws of Nature*, he holds to be diſcoverable by Men; and ſhews how to diſcover them: in which ſingle Point the whole of his new Engine centers. There are but two *Sections* finiſhed of this ſecond Part: the firſt whereof lays the Foundation of the *Doctrine of Forms*, and exemplifies it by a general Example, and a Set of *Tables* for the Purpoſe: and the *ſecond Section* ſhews how to ſhorten Enquiries, conducted in this Method; by ſelecting only the more eminent Facts and Obſervations, or *Capital Inſtances*, that lead to a full and perfect Diſcovery; without ranging, in an endleſs manner, through that immenſe Variety of Particulars, to be found in Nature. *The Foundation of the whole laid in the Diſcovery of Forms.*

62. But as it would be a fruitleſs Labour to go upon diſcovering theſe *Forms*, without knowing their Uſe, when found; the firſt Section of this *ſecond Part* ſhews, that the End of Philoſophy is to increaſe either the *The Uſe of Forms, when diſcovered.*

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Knowledge, or Power of Man; ſo as to enable him to underſtand the Ways and Procedure of Nature; or elſe to produce ſuch Effects as make for his own Advantage: and that to diſcover *Forms*, is at once to acquire both this *Knowledge*, and this *Power*; becauſe by finding the Laws of Nature, and her Ways of producing Effects, Men will be enabled, ſo far as their Condition allows, to uſe the ſame, as Rules of Practice; and thus, in ſome Caſes, to equal, regulate, ſubdue, or even excel Nature by Art. So that upon the Diſcovery of *Forms* depends the Perfection of Philoſophy, or the Enlargement of the human Knowledge and Power.

The Diſcovery of Forms explained and illuſtrated.

63. This Buſineſs of diſcovering *Forms* being of ſuch infinite Importance, the Author endeavours to make it as intelligible as its Nature will admit, in the preſent imperfect State of Minds and Things; and ſhews, that in effect, to diſcover Forms, is the ſame Thing as having ſome extremely intelligent Perſon, ready at hand, to conſult upon all Occaſions concerning the Works of Nature; the Search after *Forms* being like asking of Queſtions; and the Diſcovery of them like the receiving of Anſwers: ſo that there is no Point of Theoretical Knowledge, no Rules, or Directions, required in Practice, but what may as well be had by the *Diſcovery of Forms*, as if Nature herſelf were to ſpeak, and tell Men how ſhe works; and what they muſt do to imitate, lead, or command her. For to find a *Form*, is to find a Nature, that ſhall be equivalent to the Nature ſought; ſo as when preſent, or abſent, to conſtitute, or aboliſh, that Nature reſpectively. Or, to make the Conception ſtill plainer, the Form of a Thing is the effective Power, or phyſical Act, by which it exiſts. Thus if the Nature ſought were *Fluidity*, or the Means of converting Charcoal into a fluid Maſs; and it be found, by a proper Courſe of Enquiry, called the *Inveſtigation of Forms*, that the Form, Law, or Nature of Fluidity conſiſts in a certain Size, or Smallneſs of Parts, join'd with a certain Motion; this is finding a Nature equivalent to, or convertible with, Fluidity: whence Men are directed to give this Smallneſs of Parts to Charcoal, along with the particular Motion diſcovered; upon which, the Charcoal will put on the Nature of Fluidity: and accordingly, if Charcoal be reduced to Powder, and detained in a cloſe Veſſel in the Fire, till its Parts are ſufficiently agitated, it will have the Appearance of a Fluid. And this may illuſtrate, or give ſome ſenſible Image of the Thing under Conſideration; and ſhew that both a perfect Theory, and a perfect Practice, depend upon the *Diſcovery of Forms*.

Practice to preſide in building up the Sciences.

64. But as a pernicious Cuſtom of leaving Experience, and running into abſtract Speculations, has prevailed; the Author judges it much the ſureſt Method to begin to raiſe the Sciences from Practice; or to let the practical Part deſcribe and limit the theoretical, or contemplative. He therefore enquires what are the beſt practical Rules that could be wiſhed for; and finds them afforded by the *Diſcovery of Forms*: ſo that, on all Accounts, the *Inveſtigation of Forms* is the firſt and principal Thing that can be gone upon, in order to improve Philoſophy, and perfect

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perfect the Sciences; eſpecially as, at the ſame time, theſe *Forms* alſo afford, according to what was before obſerved, perfect theoretical *Axioms*, as well as the beſt practical *Rules*, *Canons*, or *Precepts*.

The Canons and Axioms required to Practice.

65. On this footing, the Requiſites to Practice muſt be firſt conſider'd; that is, the Means of enlarging the human Power, and enabling it to introduce all poſſible Changes upon Matter; or produce all poſſible Effects. And here the Author ſhews there are two different Kinds of *Canons*, or *Axioms*, for producing Tranſmutations, or Changes; *viz.* one with regard to Bodies, as they are an Aſſemblage, or Combination, of a Set of Properties; as Gold is of a determinate Gravity, Ductility, *&c.* and another that depends upon finding the Way wherein Nature herſelf proceeds in the Generation or Production of Bodies; as how Gold was made in the Bowels of the Earth, *&c.* The firſt kind of *Axiom* ſhews how Things are made by introducing a certain Set of ſimple Properties into a Maſs of Matter ſuſceptible thereof; and the ſecond directs the Way of proceeding by ſeminal Properties, as it were; or beginning with the Rudiments of Things, and uſing the ſame firſt Matter, and Means, that Nature herſelf employs. And where the Power of Mankind cannot poſſibly reach to operate, as in the Heavens, *&c.* yet even there the Facts of Nature may be ſought; and her Laws and Manner of proceeding diſcover'd. The whole Proceſs of finding theſe Axioms, and diſcovering the Cauſes of Things, the Author calls by the Name of the *Interpretation of Nature.*

The Interpretation of Nature, divided into two Parts.

66. This *Interpretation of Nature* has two Parts; the firſt with regard to the forming of *Axioms* from Experience; and the ſecond with regard to the contriving of new Experiments from *Axioms*. The firſt requires proper Helps for the Mind; or Aſſiſtances for the Senſe, the Memory, and the Reaſon: and hence, before this *Interpretation of Nature* can be exerciſed to Advantage, a juſt and extenſive *Hiſtory of Nature and Art* muſt be procured; as the firſt Matter out of which *Axioms* are to be framed, *Forms* diſcovered, and *Philoſophy* built.

The Hiſtory requiſite thereto.

67. This Hiſtory is not to be a Rhapſody, or confuſed Collection of all ſorts of Matters, thrown together on a Heap; but to be carefully digeſted, and formed into regular *Tables*, or Packets of *Inſtances*, and prepared Parcels of Hiſtory; as the Pillars, the Rafters, *&c.* are made ready for a Building. And when ſuch a Hiſtory ſhall be procured, the Underſtanding is not to work upon it by means of its own ſimple natural Powers; but is to be aſſiſted by the Uſe of genuine *Induction*; and thus enabled to practiſe the Art of *inveſtigating Forms.*

The Method of inveſtigating Forms.

68. (1.) The Subject of Enquiry being choſe; ſuppoſe, for Example, the *Form of Heat*; all the Inſtances wherein Heat is found are to be duly collected, and ranged in a particular *Table*; ſo as to afford a clear View of theſe Inſtances to the Mind. A diſtinct Enumeration muſt, therefore, be made of all the Things that are hot; as the Sun's Rays, Flame, ignited Iron, *&c.* (2.) A Collection is to be made, and a regular *Table* formed,

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Tables to be formed. of thoſe Things wherein Heat does not reſide: but as this might ſwell the *Table* immoderately; only ſuch Things need be mention'd as approach near to the Nature of the former, except in the ſingle Property of Heat, which they are without; ſuch as the Rays of the Moon, certain Corruſcations, Glow-Worms, *&c.* that afford Light, but no Heat. And thus the Things that are not hot, being placed over againſt the Things that are hot, the Mind may diſtinctly compare the two ſorts together. (3.) A *Table* muſt next be formed, to ſhew the different Degrees of Heat, that are found in different Things; or to exhibit, at one View, all the Inſtances of Heat, with regard to more and leſs; beginning with ſuch Things as are not ſenſibly hot to the Touch, and proceeding gradually to the moſt violent Heats, as thoſe of Vulcano's, the Burning Concave, *&c.*

From whence to be derived. 69. Theſe *Tables* ought to be drawn from the Hiſtory of Nature and Art, mentioned above; or borrowed from the *Natural Hiſtorian*; and laid before the Philoſopher, or *Interpreter of Nature*; whoſe Office it is to practiſe the Art of Induction upon them; ſo as by comparing them together, both in general, and in particular, to find ſuch a Nature, Law of Motion, or Action, as being preſent, exerted, or performed, in any Body, or Portion of Matter whatſoever, the Nature of Heat, or Heat itſelf, ſhall of neceſſity be produced therein; and ſuch as when that Law, Motion, or Action is abſent, Heat ſhall be abſent; and ſo come and go with that Law, Motion or Action perpetually; or attend it in any intermediate Degree, according to the exact Proportion wherein that Law, or Action is exerted: which is what the Author means by the *Form of Heat.*

The Method of Rejection, how to be practiſed. 70. But here, if the Mind ſhould of itſelf directly endeavour, without farther Aſſiſtance, to diſcover the Forms of Things; it would fall upon ill defined Notions, Imaginations, Gueſſes, Probabilities, and imperfect Axioms, inſtead of true and genuine *Forms*; and thus be far from obtaining the End propoſed by this new Method. The next Step, therefore, is to practiſe the Buſineſs of Excluſion or Rejection; *viz.* to throw away, or ſeparate in the Mind, all thoſe Things from the Nature of Heat, which do not immediately, and of abſolute neceſſity, belong to it; ſo that a compleat and perfect *Notion*, *Axiom*, or *Form*, that is, the pure Conception of the true Cauſe, Eſſence, or Nature of Heat, may remain as a ſolid and perfect Portion of Truth behind. And this Excluſion alſo is to be performed in the Way of a *Table*, wrote down as the former. Hence, as the Sun's Rays are found to be hot, the ſuperficial Notion that Heat is peculiar to terreſtrial Bodies, muſt be rejected, *&c.*

The Interpretation of Nature, how begun. 71. And thus the Buſineſs of *Induction* is begun; but by no means rectified and finiſhed: for as this Excluſion, or Rejection, is the throwing out of ſimple Natures, or Properties, from the Nature of Heat; a perfect Knowledge of ſimple Natures is previouſly required, before the Induction can

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an be compleated. But Men have not hitherto acquired perfect Notions of ſimple Natures, or the ſimpleſt Properties of Things; ſuch as Tenuity, Fluidity, Texture, &c. In the mean time, becauſe Truth will eaſier ariſe from Error, than from Confuſion; the Underſtanding may be permitted, by conſidering the ſeveral *Tables*, to make ſome Attempt towards interpreting Nature, in the Affirmative; or to find out the poſitive, actual *Form*; tho' without pretending that it is truly and perfectly diſcover'd, till all the preceding *Tables* ſhall have been perfected: which, as was before obſerved, depends upon a perfect *Hiſtory of Nature*; and again, upon uſing a perfect *Induction*; which is an Art that has not hitherto been duly proſecuted, and brought to the neceſſary Degree of Perfection.

By way of Permiſſion to the Underſtanding.

72. However, to give an Idea of the whole manner of Procedure in this Buſineſs of *Interpreting Nature*, when all Things ſhall be properly fitted for the Purpoſe; the Author here adds a fifth *Table*, to repreſent what he calls the *firſt Vintage, or Dawn of Doctrine, from the Form of Heat*. And this *Table* ſets to View the Proceſs of the Mind, ſolely employ'd, without Diſtraction, or Interruption, upon the ſeveral preceding *Tables*, in order to inveſtigate, or diſcover the *Form of Heat*. The Reſult of the whole Proceſs amounts to this, that *Heat is an expanſive, bridled Motion, ſtruggling in the ſmall Particles of Bodies:* which is a ſummary Expreſſion, or *Axiom*, deſcribing the *Form of Heat*, ſo far as could be derived from the *imperfect Tables*, and the imperfect Art of Induction here employ'd. And with this Idea of the Whole, the Author concludes the firſt Section of the Second Part of the *Novum Organum*.

The ſecond Section tends to perfect the Art of Induction.

73. In the *Second Section*, the Author proceeds to perfect the *Art of diſcovering Forms*, or to ſhew the manner of framing an *Induction* that ſhall conclude as juſtly in Philoſophy, as Syllogiſm does in Logic, or Demonſtration in Mathematics. Accordingly, he here directly treats of *Prerogative Inſtances*, or the Way of procuring proper Collections of ſuch Facts, Obſervations, and Experiments, as are beſt fitted to enter the three *Tables* of View, correſponding to the three firſt, above-mention'd; ſo that a few of theſe Inſtances may anſwer the Purpoſe of many, ſhorten the Buſineſs of Search and Enquiry, and afford a prepared and proper Matter for *Induction*, in all kinds of Subjects.

The various Kinds of Inſtances, for the purpoſe.

74. And of theſe *Inſtances*, he makes twenty-ſeven different kinds; *viz.* (1.) Such as exhibit the Nature enquired after, in Things that agree with, or differ from others, in reſpect to that Nature only. (2). Inſtances wherein the Nature ſought appears in a State of Generation, or Deſtruction. (3.) Thoſe wherein the Nature enquired after ſtands alone, in a high Degree of Perfection or Predominancy. (4.) Such as ſhew the Thing enquired after, in its loweſt State, weakeſt Virtue, or firſt Rudiments. (5.) Such as exhibit the Nature enquired after, in the way of a leſſer *Form*. (6.) Such as ſhew a Likeneſs and Relation in the Concrete, ſo as to help in uniting Nature. (7.) Such as ſhew Bodies in the

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Concrete, as it were out of their Courſe, or broken in Nature. (8.) Errors of Nature, Things monſtrous, extraordinary, or out of the Courſe of Nature. (9.) Bodies conſiſting of two different Natures, or double Species. (10.) The moſt perfect Works of Men in every Kind. (11.) Inſtances wherein the Nature ſought is either conſtantly preſent, or conſtantly abſent. (12.) Inſtances that ſhew the Limits of Nature, or the Bounds betwixt Exiſtence and Non-Exiſtence, in all Subjects. (13.) Such as mix and join Natures ſuppoſed to be incompatible, or heterogeneous. (14.) Such as ſhew an inviolable Conjunction of one Nature to another, and the ſeparable Alliance of others. (15.) Such as ſhew the Separation of Natures that frequently meet. (16.) Such as aſſiſt the Actions of the Senſes; particularly the Sight. (17.) Such as bring thoſe Things to the Senſes that did not appear before. (18.) Such as diſcover the Motions of Nature connected, or gradually continued. (19.) Such as afford Information, where the Senſes fail. (20.) Such as excite the Attention, and hint the Subtilty of Nature. (21.) Such as meaſure the Powers, and Virtues of Things, by Space. (22.) Such as meaſure the Powers of Nature by Time. (23.) Such as ſhew in what Proportion, Quantity of Body contributes to Quantity of Virtue. (24.) Such as ſhew the Prevalency or Subjection of Virtues to one another; under which come all the Species of Motion, or active Powers. (25.) Such as point out Advantages and Conveniences for Mankind. (26.) Such as regard Things of common Occurrence, and therefore ſave the Trouble of new Demonſtrations; under which come the ſeveral Ways of Practice, or Means of Operation. And (27.) Such Inſtances as ſhew that a ſmall Quantity of Matter, or an apparently ſmall Efficient, may have a great Effect.

The Doctrine of Inſtances, *how treated by the Author.*

75. This Doctrine of *Prerogative Inſtances* is treated with Care; and illuſtrated with a ſuitable Variety of Examples, that open the Way to Enquiries of all Kinds, and lead to the Improvement of all the Parts of Philoſophy; ſo as to ſhew, in a ſummary View, what is already known, in numerous Subjects, and direct a farther Proſecution; at the ſame Time that the Author is carrying on his own particular Deſign of perfecting the *Art of Induction*; and laying down Precepts, and giving Directions for the Execution of the remaining Parts of his *Inſtauration*. And here ends all that is left us of the *Novum Organum*.

The Novum Organum *imperfect.*

76. It is extremely to be regretted that the Author did not finiſh this Piece; of which it is evident he had the complete Idea, with its almoſt infinite Train of Uſes. But there being nothing at that Time extant, which could, in any tolerable Degree, afford the neceſſary Inſtances for the *Tables of View*; he thought it incumbent upon him to ſet an Example, at leaſt, of the manner of procuring them; as he did in his *Sylva Sylvarum*; and afterwards digeſted and faſhioned many of them into particular *Tables*, in his *Hiſtory of Winds*, *Hiſtory of Life and Death*, &c.

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77. He had propoſed to deliver the remaining Parts of this *Organum* under the following Heads; *viz.* (1.) the *Helps of Induction*; (2.) the *Rectification of Induction*; (3.) the *Method of varying Enquiries*; (4.) the *Prerogative Natures for Enquiry*; (5.) the *Limits of Enquiry*; (6.) the *Reduction of Enquiries to Practice*; (7.) the *Preliminaries to Enquiry*; and (8.) the *aſcending and deſcending Scale of Axioms* [a]. It might, perhaps, be of ſome Utility, briefly to go over theſe ſeveral Heads, ſo as to indicate a little of the Manner wherein it may be conjectured, from his other Writings, the Author propoſed to treat them; and, at the ſame time, refer the Reader to thoſe Parts of his own, and others Works, where farther Light and Aſſiſtance may be procured towards finiſhing the Whole. *Eight general Heads thereof remaining unſpoke to.*

78. (1.) The firſt Thing in order, after the *Doctrine of Prerogative Inſtances*, was, to lay down the *Helps of Induction:* under which it ſhould ſeem, that the Author propoſed to deliver, (1.) the Way of procuring a genuine Hiſtory of Nature and Art; as the Baſis, or Matter, of Induction [b]; (2.) to explain the Manner wherein this Matter might occaſionally be reduced into regular *Tables of View*, according to the Nature of each Subject [c]; (3.) to ſhew the Order, or Method, wherein the Mind is to conſider the *Inſtances* contained in theſe *Tables*, both ſeparately and comparatively, or collectively, in order to diſcover the Cauſes of the Thing enquired after; and deduce the *Axioms* for directing new Experiments [d]; (4.) How theſe *Tables of View* are afterwards to be improved, or made more full or comprehenſive, and ranged anew; ſo as to exhibit all the Particulars, in their moſt natural Order, and afford ſtill greater Aſſiſtance to the Mind, in forming more juſt and perfect Conceptions, Notions, and Axioms [e]; and (5.) the ſeveral Ways that might be contrived for helping or improving the Senſes, the Memory, and the Reaſon, in order to the forming a more perfect *Induction* [f]. *The Helps of Induction.*

79. (2.) The *Rectification of Induction* ſtands next in order; by which appears to be meant the making a due Excluſion, or Rejection, of all thoſe ſimple Natures, or Properties, that do not eſſentially contribute in conſtituting the *Form* of a Thing; ſo that, after ſuch an Excluſion is compleatly made, the pure *Form* ſhall remain behind, unattended with *The Rectification of Induction.*

[a] See *Part* II. *Aph.* 21.

[b] See *Vol.* I. *p.* 44——47. 291——300. *Vol.* II. *p.* 327, 393——398. 406——408. *Vol.* III. *p.* 8——18. *& alibi paſſim.* See Dr. *Hook's Method of improving Philoſophy*, p. 18——33. and Mr. *Boyle's Works*, paſſim.

[c] See *Vol.* I. *p.* 125——130. *Vol.* II. *p.* 328, 335, 395, 433——466. *Vol.* III. *p.* 320——327, 337, 341, *&c.*

[d] See *Vol.* I. *p.* 117, 119, 127. *Vol.* II. *p.* 328, 329, 424——466. *Vol.* III. *p.* 16——18.

[e] See *Vol.* II. *p.* 328, 334, 335, 454, 455. *Vol.* III. *p.* 321, 322.

[f] See *Vol.* II. *p.* 327, 504——513, 514——517. See alſo Dr. *Hook's Method of improving Philoſophy*, p. 12——18. 34——42. and M. *Tſchirnhaus's Medicina Mentis*, p. 182——211, *&c.* 2d Ed.

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any thing more than is abſolutely neceſſary, or eſſential to it: that is, a perfect Notion of the Eſſence, or conſtituent Cauſe, of the Thing, will be obtained, according to what was mentioned above [g].

Means of rectifying Induction.

80. The Buſineſs of rectifying *Induction*, will, therefore, require (1.) a previous Knowledge of ſimple Natures, or a Set of juſt and philoſophical Notions; and (2.) the Way of contriving and making certain Experiments, or Trials, for producing certain Works, that ſhall verify and confirm the Truth of the *Induction*; by ſhewing, that if Men operate according to ſuch Rules as are afforded by the *Axioms*, or *Forms* diſcover'd by *Induction*, they may produce the Works and Effects thus pointed out; which are ſuch as could not be otherwiſe ſcientifically produced by Men [h].

Induction a priori.

81. The Way of forming theſe Notions, is by the Uſe of *Induction* itſelf [i]; and requires an entire Extirpation of all falſe Theories, Idols, and vain Imaginations; that the Mind may become perfectly equable, and diſpoſed to receive theſe genuine Notions [k]; which are not to be made conformable to the Senſe of Man, but in exact Agreement to the Senſe of Nature; ſo as to be ſcientifical and juſt Expreſſions of Things, as they exiſt in Nature; and not as the Mind, of itſelf, from the firſt Information of the Senſe, is apt to imagine them. And theſe Notions will enable us to make a true *Induction*, as it were, *a priori*.

Induction a posteriori.

82. But the other Way of rectifying *Induction*, is *a poſteriori*; and depends upon this, that when a *Form*, an *Axiom*, or *Canon*, is found, or ſuppoſed to be found, by uſing the *Tables of View*, and the *Method of Rejection*; the proper Experiments are to be contrived, for determining whether this *Form*, *Axiom*, or *Canon*, be real, and not imaginary, or fictitious. And here the Doctrine of *Prerogative Inſtances* is of great Service, in indicating the requiſite Trials, Experiments, or Works, for this Purpoſe [l]. If the expected Effect ſhould in no wiſe follow, the Particulars of the *Tables* were either falſe, or incompetent; for the Method, when properly purſued, muſt needs be infallible. If the Effect anſwer but in part, and no Error has been committed in the Experiment; then the Form, Axiom, or Canon, muſt be mended, by going over the Induction with more Exactneſs, and better Helps. If the Effect anſwers to the full, under a due Variation of Circumſtances, and in all Trials; a Proof will thus be gain'd of the Juſtneſs of the Procedure, the Goodneſs of the Induction, and the Validity of the Diſcovery. And theſe two, it

[g] §. 71.
[h] See *Vol.* II. *p.* 335, 425.
[i] See *Vol.* II. *p.* 325, 326, 351——368, 397.
[k] See *Vol.* II. *p.* 327, 346, 504. See alſo Dr. *Hook's Method of Improving Philoſophy*, p. 9. and M. *Tſchirnhaus's Medicina Mentis*, p. 72——91.
[l] See *Vol.* II. *p.* 467, *&c.*

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it ſhould ſeem, were the principal Ways, which the Author propoſed for *rectifying his Induction* [m].

83. (3.) The next Head is the *Method of varying Enquiries:* by which we are to underſtand not only the ſuiting of the Manner of Enquiry to the Nature of the Subject occaſionally; but alſo the Ways of tranſpoſing, enlarging and improving the Parts of an Enquiry, both with regard to the Matter and Method, according as new Information, and farther Light, is obtained. *The Method of varying Enquiries.*

84. Thus, when the View is to diſcover Axioms or Forms, the Enquiry muſt proceed from Particulars to Generals; or from a Variety of appoſite Inſtances, diſpoſed in ſuitable *Tables*, to the Axioms they afford, or the Form they point out: but when the Deſign is to lay out a Work, which itſelf is a particular Thing, we muſt begin with Generals, or the Axioms already obtained; and deſcend, by degrees, to the Work required [n]. And, in both theſe Caſes, moſt of the Steps that are firſt taken will remain improvable; as the Mind becomes better acquainted with the Subject, and the Things that relate thereto: till at length the Enquiry turns to a *perfect ſcientifical Hiſtory*; where no farther Alteration of the Method can be made to Advantage; nor any thing farther be added, for diſcovering the *Form*, or directing the *Work*; which was the original Subject of the Enquiry [o]. *The Procedure from Particulars to Generals.*

85. (4.) The next general Head of the *Second Part* of the *Novum Organum*, is the *Prerogative Natures for Enquiry*; whereby we are to underſtand the Art of chuſing thoſe Subjects, a few of which may ſerve inſtead of many; as in the Doctrine of *Prerogative Inſtances*; where the Author has ſhewn how all Infinity of Search may be cut off; or how, inſtead of an infinite Number of Particulars, a few may be ſelected, that ſhall more advantagiouſly anſwer the ſame End: For the like is to be done in Enquiries. So that the Deſign here ſeems to have been to indicate a few *capital*, or *leading Enquiries*, which being duly proſecuted, ſhould unfold Nature as effectually as if all poſſible Enquiries were proſecuted; thus proportioning the Buſineſs of perfecting Philoſophy, to the Shortneſs and Caſualties of Life [p]. What theſe Enquiries are, may be learnt from thoſe which the Author directly went upon; and thoſe he intended to have proceeded with [q]: and in what Order theſe Enquiries ſhould be proſecuted; or which ſhould come firſt, which ſecond, *&c.* muſt be determined either according to their Utility in Life, or *The Prerogative Natures for Enquiry.*

[m] See *Vol.* II. *p.* 330.

[n] See *Vol.* II. *p.* 330, 517——560. *Vol.* III. *p.* 316, 320. See alſo below, §. 88, 89, 90.

[o] See above, §. 76. See alſo Mr. *Boyle's Method of proſecuting Enquiries*, Abridg. *Vol.* I. in init. *p.* 24, 25.

[p] See *Vol.* II. *p.* 330, 331.

[q] See *Vol.* III. *p.* 11, 12, 19, 29, 335, 337, 437, 503. See alſo Dr. *Hook's Method of improving Philoſophy*, p. 18——70.

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the Tendency they have to prepare the Way, and lead to, or facilitate the reſt, and perfect the entire Body of Philoſophy [r].

The Limits of Enquiry.

86. (5.) The *Limits of Enquiry*, or an Inventory of all the Natures in the Univerſe, is the Head that comes next in order; under which, in all Probability, the Author intended to ſhew, that the whole Scheme of his *Inſtauration* was no impoſſible, or infinite Thing; but limited and circumſcribed within moderate Bounds; ſo as to be executed by Men, in their preſent State, without a Miracle, by the due Exerciſe of their Faculties, for a competent Time [s]: Since Nature her ſelf is limited; and ſince the Univerſe conſiſts but of a certain Number of ſimple Natures, combined into numerous Things; as the Letters of the Alphabet are into numerous Words: whence, if theſe ſimple Natures were underſtood, the whole Syſtem of Things might be eaſily unravelled [t].

The Hiſtory of Nature, to be collected.

87. The principal Difficulty ſeems to lie in the collecting a juſt and ſufficient *Hiſtory of Nature and Art*; for if this was once procured, the reſt would follow almoſt ſpontaneouſly. And yet this *Hiſtory*, when ſoberly and prudently conſider'd, will be found no monſtrous or impracticable Undertaking; provided the proper Expence be allow'd, a ſuitable Number of Hands be employ'd, and the true Method of doing it be obſerved [u]. The Author has endeavoured to give an Epitome of the whole Thing, in the Compaſs of a few Lines [w].

The reducing of Enquiries to Practice.

88. (6.) The next general Head is the *reducing of Enquiries to Practice, or making them ſubſervient to human Uſes.* This ſeems chiefly to regard the conducting of Enquiries, where not *Forms*, *Axioms*, or *Canons*, are the Things in View, nor even the Diſcovery of Experiments; but where Works and new Arts are to be invented, laid out, and brought into Uſe, for a common Benefit and Advantage. And the general Method of effecting this was above obſerved [x] to be by proceeding downwards, from general Axioms, to the particular Work propoſed.

89. But

[r] See *Vol.* III. *p.* 17. The Direction of the *Medicina Mentis* is here different; as it would have no regard paid to Excellence, or Utility; and nothing to be primarily intended but the ſimple Diſcovery of Truths. See that Work, *p.* 209——212.

[s] See *Vol.* I. *p.* 4, 10——16. *Vol.* II. *p.* 405. *Vol.* III. *p.* 319, 320.

[t] See *Vol.* I. *p.* 84. *Vol.* II. *p.* 344, 381.

[u] See *Vol.* I. *p.* 13, 14. *Vol.* II. *p.* 393, 394, 401, 405. *Vol.* III. General Preface. See alſo *Vol.* III. *p.* 16. and Dr. *Hook*'s *Method of improving Natural Philoſophy*, *p.* 27, 29, 36. but particularly *p.* 21. where the Doctor has theſe Words: "I have very good Reaſon to believe "that the whole Maſs of *Natural Hiſtory* may be contained in much fewer Words than the "Writings of divers ſingle Authors: and the Method of uſing them will be much more eaſy; "and the Labour of interpreting or underſtanding them, if done aright, will be almoſt as eaſy, "as to unravel a Bottom when you begin at the right End."

[w] See *Vol.* III. *p.* 320.

[x] §. 82.

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89. But beſides this, the Author intended to ſhew the Method of making general *Practical Tables*, for laying out Works with the greater Eaſe, and bringing them more ſpeedily to Perfection. And in this View it ſeems to be, that in every Enquiry he conſtantly reſerved a particular Head, or *Table*, for receiving the Things that more immediately regarded Practice, and human Uſes [y].

90. Again, beſides the Method of deriving new Arts, or Works, from Axioms; there is another more mechanical and facile Method of deriving them from former Experiments, or Works themſelves: which Method, tho' by no means ſo ſafe and certain as the former, may however prove of conſiderable Service; eſpecially if it were duly cultivated and improved [z].

The Preliminaries to Enquiry.

91. (7.) The next Head is *Preliminaries to Enquiry*; by which it may be conjectured the Author meant not only the getting rid of Prejudices, and falſe Notions [a]; the conſulting one's own Genius, Diſpoſition, and Abilities [b]; but likewiſe the procuring all neceſſary Aſſiſtances for the Purpoſe; and particularly uſing the artificial Armour, or Machinery of the Mind; ſo that the Mind may act in the higheſt Degree of its Powers, and Faculties [c]. And under this Preparation may be included *Tables*, or *Heads, of Enquiry*, previouſly drawn up, to direct the Mind what Particulars it ſhould enquire after; what Queries it ſhould make; and what Intimations it ſhould obſerve, with regard to the ſubſequent Buſineſs of Interpretation [d], *&c.*

The aſcending and deſcending Scale of Axioms.

92. (8.) The laſt general Head of the *Second Part* of the *Novum Organum*, is the *aſcending and deſcending Scale of Axioms*; which was touched above [e]. It may be farther added, that the Buſineſs of Enquiry, and the Improvement of univerſal Philoſophy, depend entirely upon (1.) forming Axioms from Particulars, by legitimate *Induction* [f]; (2.) verifying theſe Axioms [g]; (3.) raiſing ſtill nobler and more general Axioms from the former, till thoſe of the higheſt Order are obtained, reaching even to the Univerſalities of Nature [h]; and (4.) reſolving theſe ſublime Axioms again, by ſure Steps, or Gradations, into lower Axioms, that lead

[y] See *Vol.* II. *p.* 330. *Vol.* III. *p.* 18, 497.
[z] See *Vol.* I. *p.* 119, *&c. Vol.* II. *p.* 330, 517, *&c.*
[a] See *Vol.* II. *p.* 351, *&c.*
[b] See *Vol.* II. *p.* 334.
[c] See *Vol.* II. *p.* 327, 328, 334, 335, 338, *&c. Vol.* III. *p.* 316—320. See alſo Dr. *Hook*'s *Method of improving Philoſophy*, p. 12, 18, 42, 64.
[d] See *Vol.* II. *p* 332—335. *Vol.* III. *p.* 8—16, 313, 327. See alſo Dr. *Hook*'s *Method of improving Philoſophy*, paſſim.
[e] §. 84, 88.
[f] See *Vol.* II. *p.* 329, 396, 397, *&c.*
[g] See above, §. 78, 80.
[h] See *Vol.* I. *p.* 510. *Vol.* II. *p.* 334, 335. *Vol.* III. *p.* 316, *&c.*

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lead to an unlimited Practice, and diſcover all the Arts and Works that are wanting to accommodate human Life [1].

Concluſion. 93. And thus the general Heads that require to be filled up, for perfecting the Deſign of the *Novum Organum*, have been briefly ſpoke to, either in the way of Conjecture, or from parallel Places of the Author; with this View, that Perſons of Leiſure, who have been verſed in practical, as well as ſpeculative Philoſophy, may be the readier induced to finiſh a Work, whereon the Good of Mankind ſo much depends.

[1] See *Vol.* II. *p.* 335. and *Vol.* III. *p.* 316, 317.

END *of the* SECOND VOLUME.

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